

# AMERICAN ARTISAN

DECEMBER 1962

80¢ a copy

## IN THIS ISSUE

- **TWO SUSPENDED** warm air furnaces and a new ventilation system safeguard the health of workers in a foundry.

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- **IS THE CONTRACTOR** legally bound by exaggerated claims made by his employees, or by the implied warranty that equipment be fit for its intended purpose?

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- **LEADING** engineers point out that residential cooling equipment should be selected for less-than-peak loads, due to the time lag between maximum outside conditions and actual entrance of heat into the building.

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### Cover Picture

- **AS PART** of his well-rounded public relations program, a sheet metal contractor conducts a tour of his shop.

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**J-C**

## *another* **SOLVES** **TOUGH HEATING PROBLEM**

### PROBLEM

Foundry ventilating system uses fans to move air. Absenteeism high due to draughty working conditions. Unpleasant fumes and gases being circulated in working areas.

### SOLUTION

J-C engineers called in to redesign foundry heating and ventilating system. Recommended installation of TWO J-C OIL-FIRED SUSPENSION UNITS. Each unit tempers 5,000 CFM of air. Eliminates drafts. Absenteeism sharply cut. Fumes and gases no longer circulated in working areas. Installation highly satisfactory!



Photo by Jackson & Church

*Another example of J-C's ability to solve the tough heating problems faced by heavy industry.*

In the installation pictured at the foundry of the Saginaw Bearing Company, Saginaw, Michigan, Jackson & Church engineers were called upon to design a heating and ventilating system providing comfortably heated fresh air to all parts of the working area, at the same time ridding these areas of the fumes and gases present in the melting process.

The problem was solved with the two J-C Suspension units shown. In addition to heating the main foundry melting room, one unit heats an adjacent shipping area. The system has been so designed that during the night uniform temperature is maintained with only one suspension unit in operation through reducing the fresh air from outside.

**No matter what your heating or ventilating problem may be, Jackson & Church engineers are at your service to assist with the right solution. There's a Jackson & Church unit to meet most industrial, commercial and residential heating requirements.**



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**J-C**

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KO-Z-AIRE Units are Specially Designed for Convertibility — Gas to Oil or Oil to Gas

# AMERICAN ARTISAN

DECEMBER 1952

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Volume 89, No. 12

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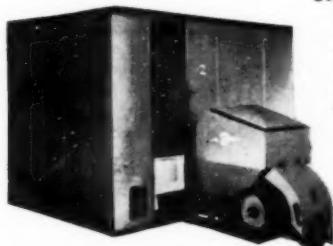
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12-5-2

# the editor's notebook

## Rise in Gas-Fired Furnace Shipments

THE GAS Appliance Manufacturers Association reports that in the first nine months of 1952, shipments of gas-fired furnaces are estimated at 314,200 units, compared with 285,300 units shipped during the same period of 1951. This represents a 10.1 per cent change.

The association lists 51,400 units for August, as compared to 29,800 units for August, 1951, a change of 72.5 per cent, and 54,400 units for September 1952 as compared with 33,300 for September, 1951, a change of 63.4 per cent. The 1952 figures are preliminary, based upon a GAMA telegraphic study, and not yet revised. Units covered are forced warm air and gravity furnaces.

## Stoker Sales Compared

FACTORY SALES of all sizes and types of mechanical coal stokers in September, 1952 totaled 3161 units, an increase of 13 per cent over the number sold in August but a slight decrease from sales in September, 1951, according to the latest report of the Bureau of the Census, Department of Commerce. Sales of stokers for residential heating use, small apartment houses and small commercial heating jobs (classes 1 and 2) accounted for 84 per cent of the total sales during the month in terms of number of stokers.

Sales for the first nine months of this year totaled 16,103 machines compared with 17,253 for the same period in 1951, with anthracite domestic heating units (conversion and integral units) showing an increase from

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F-3717...

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COMPANY**  
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## the editor's notebook

(continued)

2985 in 1951 to 5696 units this year and bituminous domestic units showing a decrease from 8896 last year to 5884 this year. For anthracite, conversion burners are listed as 1680, and integral units, 4016 for the first nine months of this year. There is no similar breakdown of anthracite units for last year.

## Plan Needed to Finance Home Improvements

THE NEED FOR devising a plan which will enable home owners to spread the cost of modernizing and enlarging their properties over a longer period of years is one of the major challenges confronting the private building industry. Elliott C. Spratt, president of the Producers' Council, national organization of building products manufacturers, stated recently.

"Millions of families desiring to expand or make substantial improvements in their homes are prevented from doing so by the fact that major alterations in most cases must be paid for in three years or less," Mr. Spratt said.

"Under those terms, the monthly payments often are higher than the family budget can absorb, especially when mortgage payments also must be made each month.

"The open-end or expandable mortgage plan meets the need in some instances, but its advantages are not generally available to home owners.

"Experience has demonstrated that it is entirely feasible to amortize mortgages on older homes over periods of from 10 to 20 years, and it should be possible to pay for home improvements on soundly constructed homes over similar periods, with relatively low monthly payments and interest rates."

## OPS to Survey Earnings

POSSIBILITY OF an automatic pass-through because of in-



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## the editor's notebook

(continued)

creased labor costs, and advisability of OPS conducting an industry earnings standard survey were discussed at the first meeting of the Rain Carrying Equipment Industry Advisory Committee with OPS officials recently. Rain carrying equipment, it was pointed out, includes such items as gutters, down spouts and flashing for buildings.

The committee was told by OPS that no automatic pass-through for increased costs, other than those already provided for metals and freight, was being considered. There was a general discussion of industry earnings standard surveys, and committee members were told by OPS that the agency was prepared to conduct such a survey, if justified, without delay. Members of the committee requested further time to indicate whether or not a survey would be of help. Irving Rubenstein, chief, Building Materials Branch, OPS, conducted the meeting.

### NAHB Convention To Stress Air Conditioning

AN ARRAY of up-to-the-minute presentations on technical developments in home building, with stress on the importance of air conditioning, and an exposition of building materials and equipment will highlight the Annual Convention-Exposition of the National Association of Home Builders in Chicago, January 18-22.

Residential air conditioning is slated for major attention at the show. An entire general session will be devoted to demonstrations, study and discussion of this popular subject.

Air conditioning equipment manufacturers, represented by the Air Conditioning and Refrigerating Machinery Association, will participate in the session. In addition, there will be at least eleven special air conditioning displays in the

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**QUICKLY, SIMPLY INSTALLED.** Illus. at left shows how entire calibration and float assembly may be inserted and positioned after two piece die-cast tank plug has easily been installed in tank — only an ordinary wrench is needed.

## SENTR-ECON

A new, durable, low cost instrument for economy installations.

Exceptionally high quality for such a competitively priced gauge. Features patented double dome with calibrations positioned between inner tube and outer heat-resistant plastic shell. Also, die-cast tank fitting — plated metals — brass rivets. No gears, magnets, cams or intricate mechanisms. Double coated cork float is impervious to oils, most chemicals and acids. Simple to install, even in partially filled tanks.  $1\frac{1}{2}$ " openings only. Factory calibrated and adjusted to insure accuracy.

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## the editor's notebook

(continued)

exposition where builders can inspect the latest equipment and acquire further information.

There will also be demonstrations on how to get good masonry, how to apply and tape drywall construction, how to get good concrete, how to apply insulating board and sheathing, how to use roof trusses, and similar topics.

House design, taxes, financing, cooperative housing, and feature presentations on the use of gas and electricity in the home are other examples of the wide range of subjects to be covered in the many general sessions, panel discussions and clinics.

### Heating Equipment Shipments Up

SHIPMENTS of all major types of heating equipment in August were above the level of July shipments, the U. S. Department of Commerce reports. Floor and wall furnaces, oil burners, and warm air furnaces made gains ranging from 20 to 35 per cent. These August shipments reached the highest monthly level of 1952 and were, in most cases, substantially larger than shipments made during August 1951.

However, totals for January through August 1952 show decreases ranging from 4 to 12 per cent for shipments of warm air furnaces and floor and wall furnaces, compared with the first eight months of 1951.

### Recommend Decontrol of Steel Products

DECONTROL of secondary steel products for warehouses under NPA Order M-6A was unanimously recommended by the Industrial Steel Products Warehouse Industry Advisory Committee to the National Production Authority, U. S. Department of Commerce, at a recent meeting. The meas-



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AIR CONDITIONERS

If you're not already acquainted with the complete Waterbury line, now is the time to find out about Waterbury's place in your future. Association with Waterbury is good business.



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the casing that  
counts!"*

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## the editor's notebook

(continued)

ure had informally been approved when the steel strike forced its revocation.

Industry members unanimously recommended that the present restriction under Direction 3 of M-6A requiring warehouses to hold 50 per cent of incoming shipments of some steel products for a period of 15 days after receipt for possible military orders be revoked or revised.

A suggestion that some change in the regulation for warehouses be made to permit them to convert hot-rolled steel bars to cold-rolled bars, providing this was a historical operation, was said by industry members to be desirable although this was a minor portion of the warehouse business. Under present regulations, all such conversions must be made under customer allotments.

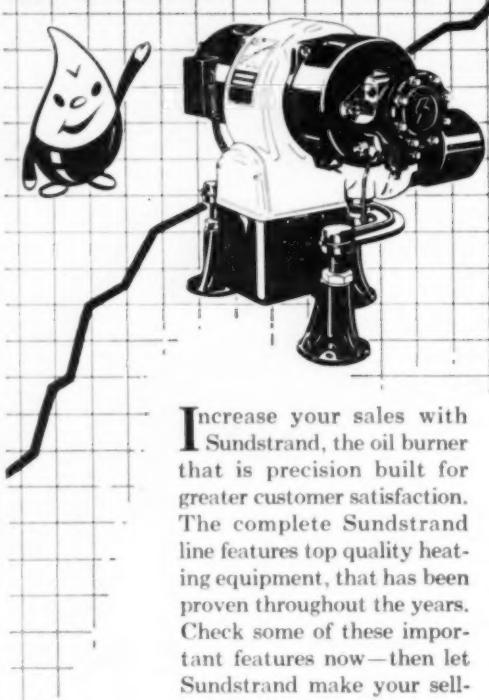
There is no improvement in sight for the delivery to warehouses in round bars 2 in. and over, industry members were told by NPA. The situation in this area will remain "critical" through the middle of next year.

### Canadian Aluminum Diverted to U.S.

AT THE REQUEST of the United States Government, the British Government and the Aluminum Company of Canada have agreed to an arrangement which will supply this country with an additional 77,000,000 lb of aluminum for delivery during December 1952 and the first two quarters of 1953, the Defense Production Administration has announced. The DPA had asked both the British Government and the Aluminum Company of Canada for assistance because of the serious loss of aluminum production in the United States caused by power shortages in the Pacific Northwest and Tennessee Valley.

These shipments will result from an additional diversion

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## the editor's notebook

(continued)

during December 1952 and the first quarter of 1953 of 44,000,000 lb under contract for shipment to the United Kingdom, together with 33,000,000 lb which were to be returned to the United Kingdom under the terms of similar arrangements made in 1951 and early in 1952.

### FPC Suspends Gas Rate Increases

THE FEDERAL POWER COMMISSION has suspended wholesale natural gas rate increases proposed by three pipeline companies, together totaling approximately \$932,000 per year. Hearing dates are to be set by further orders.

The companies, and the amounts of the proposed increases, are: East Tennessee Natural Gas Company, of Knoxville, Tenn., \$487,000; Tennessee Natural Gas Lines, Inc., of Nashville, Tenn., \$388,000; and South Jersey Gas Company, of Newark, N. J., \$57,000.

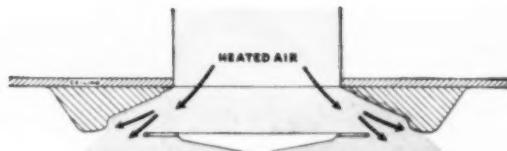
All three of the increases are suspended pending hearing and decision by the Commission. Under the Natural Gas Act, however, the increases may be put into effect under bond, subject to refund of any amounts disallowed by the FPC, if the cases are not concluded in five months.

The companies based their proposed increases on increases in rates from their suppliers. The FPC pointed out, however, that the suppliers' proposed increases are now under suspension and that the proposed increases, as stated in one case, "may be unjust, unreasonable, unduly discriminatory or preferential, and may place an undue burden upon ultimate consumers of the natural gas."

### Industry Can't "Play By Ear"

THE ERA we are about to enter may well prove to be one of the most competitive periods in

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Company.....

Street.....

City..... Zone..... State.....

## the editor's notebook

(continued)

the history of American business, was the opinion expressed by David F. Austin, executive vice president, United States Steel Co., in a recent speech.

"Today our national productive capacity is fast catching up with even that part of demand which we may properly consider abnormal." This era, he explained, is no time to "play by ear."

He concluded that a company must base its actions on rational, factual analysis, upon full utilization of the knowledge inherent in all responsibilities, upon total rejection of the concept that it is possible — to play by ear."

### Construction Activity Higher Than Last Year

EXPENDITURES FOR new construction in October declined slightly from \$3.1 billion to \$3.0 billion, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics and the Building Materials Division of the U. S. Department of Commerce. The September-October decline was somewhat less than expected for this time of year, largely because private building construction held about even with the September dollar volume. October marked the fifth successive month in which total dollar outlay for new construction was 5 per cent or more above the year-ago monthly total.

Both private and public construction expenditures declined less than seasonally this October to totals of \$1,982 million and \$1,025 million, respectively. In the private sector, residential building remained steady at just above the billion-dollar level.

For the first 10 months of this year, new construction expenditures totaled \$27,025 million, 4 per cent above the amount for the same 1951 period. When adjusted for price changes, however, construction



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## the editor's notebook

(continued)

activity was at about the same level for both years.

Private expenditures for new construction have been exceeding the year-ago monthly level since July, and by the end of October totaled \$18,066 million—almost equalling last year's January-October estimate. For the first 10 months of 1952, the dollar volume of private residential construction alone was slightly in excess of the entire public total. Public expenditures, totaling \$8,959 million, were 16 per cent higher this year than last, the rise being influenced largely by increased spending in 1952 for public industrial construction and for military and naval facilities.

### Housing Starts Remain at High Level

A TOTAL of 98,000 new permanent nonfarm dwelling units were started in September, just 1000 short of the August figure, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics. September was the seventh consecutive month this year that housing starts were at or near the 100,000-unit mark.

Thus far in 1952, a total of 866,800 new dwelling units have been placed under construction, 800 units above last year's estimate for the first nine months. A 19,300-unit increase in private housing this year over last was almost offset by an 18,500-unit decrease in public housing.

Public housing begun during September (900 units) was at the lowest level in over a year, and dropped from 24,500 units in the second quarter to but 3900 units in the third quarter. Private housing starts have been above last year's monthly rate for the past seven months, and increased this year from 294,800 units in the second quarter to 297,100 in the third quarter.

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WHO HAVE CONTRIBUTED SO MUCH  
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loyalty we shall strive  
with might and main to  
provide you with products  
that are definitely superior in  
design and construction,  
and service that takes into  
account every element essential  
to an outstandingly happy  
and profitable relationship.

# Announcing NEW MONCRIEF Units

The outstanding and well rounded Moncrief Line of heating equipment is now supplemented with 3 new products! These products, after years of development and test, conform to all of Moncrief's high standards of design and performance.

They make the well balanced line of Moncrief Furnaces and Air Conditioning Units for all fuels more complete than ever before! They make the well known Moncrief line more desirable to sell.

## HORIZONTAL FURNACES WITH GUN TYPE OIL BURNER

## GAS CONVERSION BURNER

## GAS FIRED UNIT HEATERS

Send for literature on these and other easy-to-sell MONCRIEF units and for the name of the nearest MONCRIEF jobber who has a warehouse stock of MONCRIEF equipment.

### Moncrief Oil Horizontal Furnace

Establishes a new high in Horizontal Furnace design! Possesses all the advantages that have made Moncrief a leader in oil furnaces — (1) attractive appearance (2) long life (3) great heating capacity (4) quiet operation (5) low cost. Output is 84,000 B.T.U.



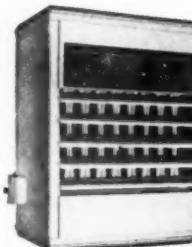
### Moncrief Gas Conversion Burner New! Different! Better!



3 popular sizes with B.T.U. inputs of 150,000, 200,000 and 300,000. More compact, yet more accessible! Only long lived cast iron and stainless steel used in burner. Attractively priced!

### Moncrief Gas Fired Unit Heater

Only after several years of research and testing has Moncrief decided that this new product is ready for the market. 4 popular sizes, 60,000, 90,000, 115,000, 170,000 B.T.U. inputs! Ingeniously designed heating elements. Ribbon burners. Accessible for inspection or servicing. Competitive prices. All the high quality associated with the Moncrief trade name.



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HEATING AND AIR CONDITIONING UNITS

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FURNACE PIPE AND FITTINGS

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and still the finest

Series #9-214

*Lima*

## FLOOR DIFFUSER

Superior for perimeter installations

Only the Lima Floor Diffuser offers all these extra features to make it easier for you to sell and balance that heating job. First in the field, Lima simplifies perimeter heating and modernization installations . . . assures complete customer satisfaction and better performance. And remember—Lima is competitively priced with ordinary floor diffusers—so why not order and install the world's finest—Lima.

**DEALERS: Get your supply of the new Lima Floor Diffuser Actual Size Demonstrating Template from your jobber. It's another Lima Sales Aid.**

*Lima*

Register Company  
(Dept. AA12-52)

651 N. Baxter Street, Lima, Ohio

"The World's Finest Register" Sold Exclusively Through Wholesalers and Manufacturers



Series #9-414

Now  
Available In  
3 NEW SIZES

### Only Lima Gives You All These Extra Features

**New Notched Vanes For Faster Change of Air Diffusion**—You can quickly shift the air diffusion pattern by using the special Lima tool to adjust setting of notched vanes. Assures greater diffusion accuracy, too, without reducing strength.

**New Hidden Locking Feature Offers Two Big Advantages**—It's a simple matter to establish correct volume valve control—and prevent tampering—with the new Lima locking device concealed beneath the floor.

**Easy To Balance For Positive Heat Control**—Simply determine the correct open position and adjust set-screw. Then the diffuser can be opened to correct position with the flick of a finger.

**Inconspicuous But Important For Proper Air Diffusion**—The trim and compact floor diffuser fits easily between 14" joists. Depth allows ample space for sub-floor, pad and carpet. Now available in four popular sizes, 2 x 14, 4 x 10, 4 x 12, 4 x 14.

**Outlet Velocity Induces Recirculation Of Air**—By locating the small Lima Floor Diffuser along outer wall, it sprays air up and out to both sides at reasonably high velocity. This pulls air from within the room toward outer walls, providing induced air circulation in the right direction without draft.

**Only One Return Air Grille Needed In Small Homes**—Because the Lima Floor Diffuser induces recirculation of air within a room, the cold air return serves only as an exhaust to supply air to blower . . . so one air return is sufficient for the average two-bedroom house.

**Heavy Construction For Rugged Strength**—You can move a piano over the trim Lima Floor Diffuser. Strong steel construction throughout, with resistance-welded vanes and "mash welded" corners gives superior one-piece strength.

**Durable Lima Metallic Bronze Finish For Lasting Beauty**—Electrostatically applied and baked on the durable Lima Metallic Bronze Finish lasts for years and years . . . an important selling feature in floor diffusers. It blends with all color schemes, too.



H. J. Brobst, right, talks over Electronic Moduflow with Honeywell representative E. E. Snouberg

## "I've sold 500 Honeywell Electronic Moduflow jobs in the last 5 years"

Here's a unique success story from Cleveland Dealer "Red" Brobst—listen to it!

"After some 500 successful installations, I say it's *easy* to sell Electronic Moduflow."

"The big appeal, the way I see it, is the fact that it's *completely different* from ordinary, conventional systems; practically a whole, new concept in heating control."

"Customers are generally surprised when I ask them if they want mechanical or *electronic* controls for their heating plant. They ask me to explain. I do—with my sales talk on Moduflow! They are fascinated when I tell them they can

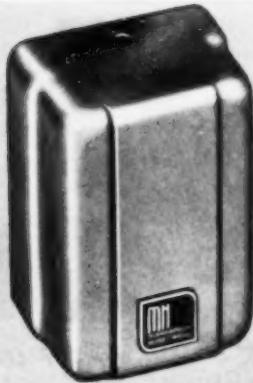
actually have a control stationed *outside* their house—the Electronic Weathercaster—that will sense and send temperature changes to the heating plant *indoors*.

"Covering the basic sales points and customer benefits of an *electronic* control system—as compared to a mere mechanical system—is usually enough. Prospects buy."

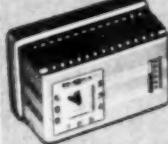
★ ★ ★  
Take a look at the next page. See how Dealer "Red" Brobst wraps up a typical Moduflow sale!



Another Plus-Profit  
Product from Honeywell



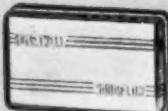
**Electronic Weathercaster**



**Electronic Chronotherm**



**Electronic Relay Amplifier**



**Averaging Thermostat**

**"Prospects' eyes pop when I  
show them how the  
Electronic Weathercaster works!"**

"When I first started selling Moduflow I found many home owners had never even *heard* of electronically controlled heating."

"But they sat up and took notice when I started to demonstrate the Electronic Weathercaster!

"And they were usually pretty well sold by the time I finished telling them about this amazing control. How, with its super-sensitive electronic wire coil, it picks up outside temperature changes and relays them inside, to the Electronic Relay Amplifier; and how the Amplifier—the 'brain' of the system—interprets these signals and sends them on to the heating plant!

"I conclude with facts about the rest of the system, like the Electronic Chronotherm with its automatic morning pick up; and how Moduflow can be adapted to almost any type heating.

"It makes a pretty wonderful sales story, and it's easy to see why it sells."

*For additional facts on Electronic Moduflow, call your local Honeywell office. Or write Honeywell, Dept. AA12-130, Minneapolis 8, Minn.*



**Mr. Howard Heyl, Lakewood, says:**

"Our feet have been warm in this house for the first time, thanks to Moduflow. The children rarely have colds any more and we've noticed our fuel bills have been way down. It's the perfect home heating system."

**"Red" Brobst's customers  
tell why they like  
Electronic Moduflow  
in their homes!**



**Mr. Harry A. Beck, Cleveland, says:**

"It's ideal. Since installing Moduflow we don't even have to change the thermostat setting, year-round. Due to the increased circulation of air, my wife tells me the house stays much cleaner, too."

**Honeywell**  
MINNEAPOLIS

*First in Controls*





## the 1953 Mueller Climatrol line!

*...a profit preview  
coming up for you!*

LOOK to the *leader* — look to Mueller Climatrol in 1953 for innovations you might expect from the Big Name in Heating.

New styling, new products that will bring you new extra business. All backed by a bigger and better advertising and sales promotion program. That means more sales, more profits for you.

For your first look at engineering advances designed to keep Mueller Climatrol in front in 1953, don't miss the January issue of this magazine! Or, for advance information write for a new, 1953 "All Products" catalog.

L. J. MUELLER FURNACE COMPANY



# Mueller Climatrol

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# News Round-Up



## Recommend Fewer Construction Controls

INFORMATION FROM many industry sources has convinced the Construction and Civic Development Department Committee of the Chamber of Commerce of the U.S. that the rapidly easing materials supply situation is very close to the point at which all phases of the defense program can be carried out promptly without the further necessity of government controls over construction, the Chamber of Commerce reports.

The committee has strongly recommended the suspension of such controls on January 1, 1953, with the necessary protection of direct defense needs. According to the committee, this action is necessary in order to retain public confidence in controls as an instrument to be used only when needed for the national defense; it is also necessary in order that the nation's largest industry may continue to maintain a reasonable level of employment.

## January Issue Will Include Special Sections

NEXT MONTH'S ISSUE of American Artisan will be a big one, with a number of special features. In addition to the Directory Section of Warm Air Heating, Residential Air Conditioning and Sheet Metal Products, it will include a Show Section devoted to the International Heating, Ventilating & Air Conditioning Exposition, to be held in Chicago, January 26-30. Exhibits will be listed and other details of the show and of the annual meeting of the American Society of Heating and Ventilating Engineers will be given in this special Show Section. All this will be in addition to American Artisan's regular editorial features. We feel sure this will be an issue you'll particularly like and will want to save throughout the year for continued reference.

## Revise Order on Metalworking Machines

ORDER M-41, regulating the delivery of metalworking machines, has been amended by the NPA. It covers any new, non-portable, power-driven item of plant equipment which is listed in the order, and has a producer's list price for the basic machine of \$1000 or more. Changes include clarification of the scheduling of unrated orders, of procedures incident to revisions in the numerical preference list, and of certain definitions, as well as elimination of balancing machines and certain kinds of measuring and testing machines from jurisdiction of the order, etc. In addition, various sections have been deleted.

## Expansion Goal Set For Aluminum Sheet

AN EXPANSION GOAL for aluminum sheet and for aluminum sheet and plate heat treating facilities was announced recently by the Defense Production Administration. Under the first part of this goal, the aim is to provide capacity for an additional 684,000,000 lb annually of aluminum sheet by January 1, 1955. This expansion will increase aluminum sheet, plate and foil capacity from 1,908,000,000 lb in 1950 to 2,592,000,000 lb in 1955.

The second part of the goal was established to provide capacity for heat treating an additional 846,000,000 lb annually of aluminum sheet and plate.

Government assistance is given through issuance of rapid tax amortization certificates or other means. Assistance under this goal will be restricted to facilities meeting the following criteria: (1) New facilities capable of producing sheet and plate 48 in. or wider; (2) New sheet and plate mills are to include heat treating facilities capable of processing a minimum of 50 per cent of finished capacity; and (3) New sheet and plate mills shall be so designed that heat treating capacity to process the total finished production capacity can be installed with a minimum of difficulty, expense or disruption to existing production.

This goal does not include additional capacity to produce aluminum foil.

## Forecasts Growing Use of Natural Gas

A LEADING RESEARCHER told the recent American Gas Association convention that by 1957 natural gas will have been expanded into a \$14 billion operation—an increase of \$5 billion by one of the nation's fastest growing industries.

Dr. Gustav Egloff, research director of Universal Oil Products Co., Chicago, felt that eventually much more than the estimated proved recoverable reserves of 500 trillion cu ft of natural gas will be found underground and underwater in the continental United States.

Envisioning underground frontiers, Dr. Egloff stated that thus far about 98 per cent of the million square miles of land area overlying our sedimentary formations remain to be thoroughly explored by the drill. Statistics showing that natural gas "supplies will be maintained well beyond the present century," were cited by Dr. Egloff. He interpreted such reserves as meeting all demands and upholding "the favorable competitive position of the industry" in the fuel field far into the future.

# News Round-Up



Much of the continuing increase in the use of natural gas, said Dr. Egloff, most likely will be "in the fields of space heating. . . ." He added that close to a million homes installed gas heating facilities during the 1951-52 heating season and another 1,100,000 new customers are anticipated for 1952-53.

## 1952 Volume Index To Be Available

AN INDEX FOR American Artisan's 1952 issues, Vol. 89, Nos. 1-12, is being compiled and will be available soon to the Artisan's subscribers on request. If you want a free copy, send a note or postcard to the Editor, American Artisan, 6 N. Michigan Ave., Chicago 2.

We'll keep your request on file until the index has been printed, and will then mail a copy to you.

## Additional Steel For First Quarter, '53

TO ASSURE maximum steel production and to meet the most pressing needs of industries for first quarter 1953 steel, the Defense Production Administration has approved the distribution of an additional 1,480,000 tons of carbon steel products.

The distribution is being made on the advice of the Iron and Steel Div., National Production Authority, and is based on a recommendation of NPA's Steel Products Industry Advisory Committee. In its October 27 meeting, the committee estimated that an additional 1,480,000 tons of certain finished steel products would be available through the first quarter of 1953.

This amount has been applied against appeals for 3,200,000 tons of the specific steel products available. The quantities of tin mill products requested were just slightly more than the 600,000 tons available. The other requests, totaling about 2,550,000 tons, were far in excess of the quantities available.

The 1,480,000 tons include 100,000 tons of small hot rolled bars (1 in. and under), 180,000 tons of drawn wire, 600,000 tons of tin mill products, 100,000 tons of hot rolled sheet, 400,000 tons of cold rolled sheet, 50,000 tons of galvanized sheet, and 50,000 tons of cold rolled strip.

## Directory Section Coming In Next Month's Issue

AMERICAN ARTISAN'S DIRECTORY of Warm Air Heating, Residential Air Conditioning and Sheet Metal Products—completely revised and brought up-to-date—will appear in the January issue.

Listing sheets have been mailed to thousands of firms throughout the country who manufacture the hundreds of items of equipment used in residential heating and air

conditioning and sheet metal work for the latest information on what products will be available during 1953. The information is carefully classified for your use, along with complete street addresses and trade names.

The January issue will of course carry its regular quota of editorial content in addition to the Directory Section.

## Christmas Bonuses Authorized

THE SALARY STABILIZATION BOARD has released General Salary Order No. 15 which authorizes employers to pay Christmas or year-end bonuses of not more than \$40 to any employee under the jurisdiction of the Salary Board regardless of whether such a bonus was paid previously.

This order, which does not cover bonuses related directly to profits, reiterates the policy established by the Salary Stabilization Board for 1951 bonuses as set forth in GSO No. 7, which is no longer applicable.

Interpretation No. 2, Revised, a question-and-answer document dealing with Christmas and year-end bonuses, continuing Interpretation No. 2 issued in 1951, has been released. Answers given in the document indicate that a company which, in 1950, paid a week's salary to each of its employees as a year-end bonus, which payment was not directly related to company profits, may follow the same practice this year. However, the employer may not pay such bonuses to groups of employees to whom they were not paid in 1950. If the practice was to pay a specific sum, rather than a portion of salary, that same sum may be paid. Answers also show that bonuses may be paid to new employees (provided new employees in 1950 also received bonuses).

## American Gas Association Receives Safety Award

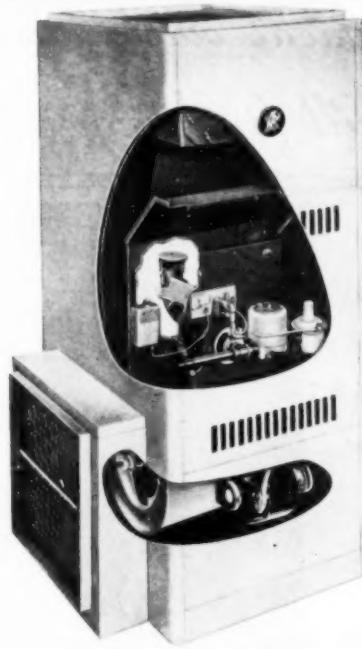
THE NATIONAL SAFETY COUNCIL has awarded the American Gas Association a certificate of commendation and a citation for meritorious activity in home safety education during the year 1951-1952.

The award and citation were bestowed in recognition of the work A.G.A. has done through the distribution and effective promotion of its safe installation standard for gas appliances among architects, builders, utility companies, enforcement agencies and home owners. The citation also praised A.G.A. for its laboratories testing and approval plan for domestic gas appliances, and for articles on safety in its own and other magazines.

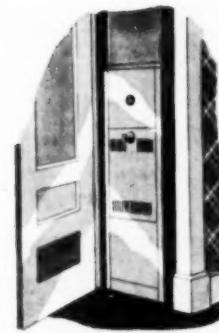
The new safety standard, ASA Z21.30, is a code to insure proper installation and correct venting of gas appliances.

SU-30-G  
85,000 BTU  
input per hour

SU-35-G  
110,000 BTU  
input per hour



AGA Approved!  
for alcove and  
closet installation



## Gas-fired RICHMOND winter air conditioner

Where space is tight, use the Richmond SU-G, gas-fired, vertical winter air conditioner...ideal for the small ranch-type installation.

Now the SU-G is approved by the AGA for alcove and closet installation. When ordered for this type of installation our standard unit is especially adapted to meet the rigid AGA requirements. When ordering the Richmond SU-G for closet or alcove use, be sure to state that fact.

Remember that the SU-G can be furnished with a bottom filter rack as optional equipment at no extra charge. And remember these special features: Remote pilot igniter (standard equipment) for convenience and safety in lighting burner from outside of furnace...burner and controls quickly and easily removable as mounting plate is held securely in place with four nuts. When space and economy count...count on the Richmond SU-G.



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Richmond Radiator Company  
19 East 47th Street, New York 17, N. Y.  
Please send me full information on Richmond SU-G  
gas-fired winter air conditioners.

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REINHARD, HOFMEISTER & WALQUIST  
Architects

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Consulting Engineer

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## **IN THE CHRYSLER BUILDING, EAST NEW YORK CITY**

The trend to complete air conditioning in today's top-ranking new office buildings is strictly a matter of economics.

People who work in these air conditioned offices enjoy year-round, health-giving comfort that pays off in increased personnel efficiency.

The new Chrysler Building East is typical. Here, once again, when architects, engineers and contractors made their selection of air conditioning equipment, Tuttle & Bailey products were chosen to complement the installation. **AT THE VITAL POINT OF AIR DELIVERY**, Tuttle & Bailey Aerofuse Square Ceiling Diffusers, Tri-Flex Grilles and Aerovane Registers assure both the comfort of tenants and the efficiency of the system.

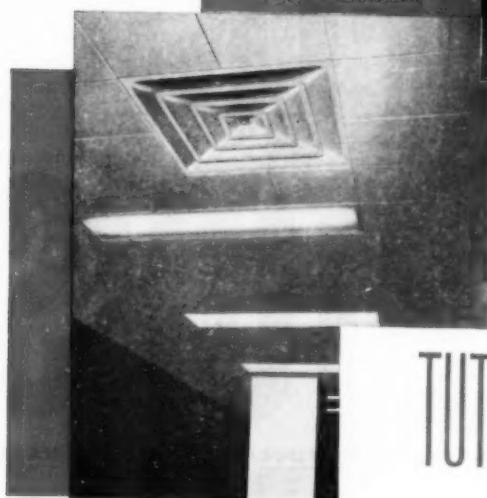
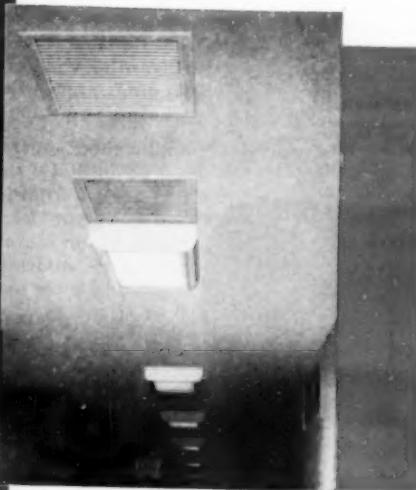
Particularly in installations like this, where widely varying private office, general office and service areas create problems in air distribution, Tuttle & Bailey products... backed by the Industry's most complete engineering and test facilities... play a key role in satisfactory performance. In design and installed appearance they measure up to the most exacting requirements of architect and decorator.

For further information, write for Catalog No. 104 and 485.

INSTALLED AT THE VITAL POINT...OF AIR DELIVERY



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# FAMOUS for long, trouble free **SERVICE!**

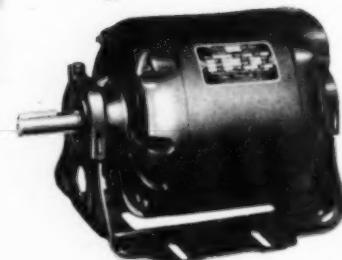
Delco motors have a record for dependability that's unsurpassed by any other motors made.

Manufacturers of heating and ventilating equipment have learned from experience that Delco motors deliver continuous trouble-free service far longer than ordinary motors.

Critical selection of materials and careful dynamic balance—plus special features such as uniflow pressure-cast rotor conductors, steel backed tin babbitt sleeve bearings or ball bearings, varnish-dipped and baked motor windings—make Delco motors the motors you want for your product.

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Delco flange-mounted motors, split-phase, 50- and 60-cycle, constant speed— $\frac{1}{6}$  to  $\frac{1}{4}$ -horsepower ratings.



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*Arnold Kruckman's*  
*Washington Letter*

## New Policies Await Inauguration

THE PEOPLE who make the wheels go 'round in the Departments, Agencies, Commissions and the many other parts of Government are concerning themselves mainly with the current operations of Government. This naturally will be the condition until the new Administration takes possession. There would be little point to the initiating of new policies and projects by the incumbents, since these policies might be rejected or modified by the incoming Administration.

And, of course, the incoming Administration takes extraordinary care not in any way to establish anything, or do anything, that may enable the outgoing Administration to attribute responsibility to those who will take possession next January. This is particularly the case under the existing circumstances. There is not what you might call mutual trust and confidence between the two groups. As for the rest of it, we go through the psychological state of suspended animation every time there is a change in the Party in power.

The conditions outlined above affect NPA and OPS in the same manner as they affect every other part of the Government. In addition, neither OPS nor NPA have any inkling, at this writing, what may be their fate. And apparently some sense of this situation has reached into the sheet metal contracting industry. For instance, the Rain Carrying Equipment Industry Advisory Committee had what was apparently a successful and interesting initial conference some time before the election. At that time it was anybody's bet which party would carry on the Government. Now, however, letters are reaching the Buildings Materials Branch of OPS urging that any further consideration of standards and price ceilings be postponed. It is obvious members of the industry have come to a realization that no policy can really crystallize until the new Administration starts.

### Speculate on Labor and Materials

This is well understood by the personnel of OPS, for which reason they feel as if they were handcuffed. Probably the factor that makes it most difficult to come to

conclusions is the uncertainty about the labor equation. As we know, wages and prices react upon each other. At this writing, OPS, not only in the Buildings Materials Branch, but throughout the Agency, feels whatever happens about the coal miners' wage demands will have a profound effect upon other wage scales pending and still to be discussed. It is this business of wages that has given the Buildings Materials Branch people cause for pause. Also, there appears to be sound reason for the supposition that labor costs may become subject to the pass-thru which has been made effective in transport and other costs. Naturally, with the change in the basic philosophy of Government, the ideas of the permanent people on the staff have gone far more to the right. And in the background there is always the difficult speculation about what Congress and the new President may do with the Taft-Hartley Law.

There is also much discussion about materials. It is not off-the-record, for instance, that steel will become far more plentiful during the second quarter of next year. During the first quarter of 1953 the steel industry will be capable of producing each month ten million tons, as considerable capacity is being added.

It is for this reason that many people in Washington are telling us, "steel will be running out of our ears". Aluminum would be abundant were it not for the acute power shortage in the Pacific Northwest where the aluminum industry, primary and manufacturing, appears to have its center. Incidentally some of the people of the national electrical industry say that the acute shortage of power in that area has been artificially induced in order to force more public works in the way of dams and power plants. Copper, also, we are told is much more plentiful by reason of the considerable supplies that are coming in from various parts of the world. The only genuine scarcity seems to exist in nickel, zinc, and tin. And these scarcities are not expected to last out the next year because the peak of defense production is set by the Pentagon to reach top during the first quarter of 1953. Thereafter, gradually, defense production



# Washington Letter

curves will go down, very slowly, and the controlled materials will become easier for ordinary domestic uses.

## Steel Controls to Go

Recently, NPA officials and the "big brass" from the steel industry met in Washington to work out a program for the smooth elimination of controls over steel and other metals that are sufficient. They discussed the differences between the manufacturers of defense-supporting goods and the big volume manufacturers. Small fabricators are particularly worried. They have often, in recent months, been caught in the steel shortage squeeze. They are afraid that premature decontrol will force them to cut production or to buy at premium prices. The same apprehension possesses all defense production interests, except the big-volume people. They want quick decontrol.

The general idea in Washington is that controls will be removed, some by the first of the year, but most at the end of April, which is the date when the major part of the control law lapses. It is generally believed that in reality controls will be greatly relaxed after January 1, and that the very character of the incoming Administration means that the compulsions exercised by those going out will either be voided or tacitly ignored. It is generally supposed that, unless there are unhappy surprises in Korea, or elsewhere, of a warlike nature, that the whole emergency structure will come down when the law is void on June 30, 1953. The assumption is that most of the emergency laws which were provided for Truman will not be wanted by Eisenhower and that nothing of the same nature will be re-enacted.

## Effects of Election on OPS and NPA Staffs

The personnel of OPS, even at this time, is gradually melting away. Many who came from industry began to leave immediately after the election. Others will go home for the Holidays and will not return. It is safe to say that the majority who came from industry will not be here in OPS or NPA after the first of the year. Those to whom the employment was a full time need are seeking other jobs. In all likelihood, OPS will carry on after the first of the year with a greatly attenuated staff.

NPA, on the other hand, so far as the permanent personnel is concerned, expects to become a fixed part of the Federal Government. If you heard Secretary of Commerce Sawyer speak while he was making his tour around the country recently, you may recall he spoke about his

current program for reorganization of the Department of Commerce. This means that he has arranged the permanent transfer of the NPA and its functions to the Department of Commerce. It is expected this transfer will be complete by the first of the year. A large part of the NPA organization, already blanketed by Department of Commerce, has been given Civil Service status. The rest, who remain, will come under Civil Service by the time they are absorbed into the Department of Commerce. This includes the personnel of the Building and Construction Bureau which has been under the direction of John L. Haynes, who is known to the people of the sheet metal industry, by reason of his long identification with the Department of Commerce. All the products of sheet metal, including everything and anything that is handled by sheet metal contractors, in NPA, has come under the Metal Products Branch, headed by R. A. Burton, as Chief, and T. M. Chandlee, his Deputy and Assistant. Mr. Burton is a Government career man. He has been a member of the Commerce Department staff for years. Mr. Chandlee comes from industry. He has functioned in various plants and businesses as a specialist in management and similar functions. Both men will do the same job in the Department of Commerce after January 1. It is not yet known what the new NPA, in its permanent incarnation, will be called. Henry H. Fowler, the Defense Mobilizer, formerly head of NPA, now head of the entire civilian defense organization, leaves Government employ on January 1.

## Various Budget Figures Quoted

President Truman will present the Budget as has been much advertised. It is expected the Budget will approach \$90 billion, although the estimates have ranged from \$70 billion up. The figure we hear most frequently is somewhere between \$80 billion and \$85 billion. Those who know what is in Eisenhower's mind, or who think they know, say that he will probably ask for a greater military budget, even than the one Truman will send to Congress. It is assumed he will wish to increase the South Korean forces, and expand the Chinese Nationalist forces on Formosa. It is supposed he will ask for the funds necessary to set up this expanded defense program in Asia. We are told that at present the expansion of Asiatic human resources into a very great military machine is limited only by equipment and ammunition. It is for this materiel that American funds are to be spent. Bear in mind that over 85 per cent of the Budget is spent

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DESIGNED ECONOMY means the Royal Jet-Aire offers you more sales points... gives more built-in labor-saving installation features than any unit.

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LET'S keep profits — LIFT your sales with the new Royal Jet-Aire. Dealerships are open in some areas; why don't you phone [collect] us, write us today. Be first with the new Royal Jet-Aire.

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Royal Heaters Inc., manufacturers of the famous Royal Jet-Flow, Mid-Jet and Forced Flow heating units, America's most advanced gas heating equipment.

for direct and indirect purposes of defense. It is by reason of this expanded defense program that you hear everywhere in Washington that 1953 will be far more "prosperous" even than 1952.

Senator Byrd already has placed himself on record in demanding that the Budget be cut by \$10 billion. He feels this will permit tax cuts instead of imposing the need to cut spending by the people to balance the Budget. Excise taxes are to be reduced, and the excess profits tax is to be permitted to lapse when the law expires during the next year. It also is planned to permit the 11 per cent increase in individual income taxes to lapse at the end of 1953. They talk about using the sales tax as a new manner of balancing the taxes that are cancelled. But it is notable that the sales tax is definitely unpopular with the leaders in both Houses of Congress. And you hear from all sources that there is to be no increase in the regular tax. Representative Joe Martin, of Massachusetts, who will be Speaker, has asserted that taxes must be cut and that expenditures must be reduced. While he was in Washington recently he said that he and Senator Taft were to meet with Eisenhower in New York early in December to discuss reduction of expenses and cutting of taxes. All those who speak with authority say there will not be an increase in the regular corporate tax rate.

### Friendlier Attitude Towards Business Seen

They tell us everywhere there will be a friendlier attitude towards business when the new Administration takes over. It is assumed the Government of the next four years will not regard itself as the master of the economy. It is expected to drop back to the traditional part of arbiter and policeman. You will find new people in all the Agencies with which you do business. It is generally assumed labor problems will chiefly be handled by the Federal Mediation and Conciliation Service, which is headed by David L. Cole, a Republican. He has in his organization an Assistant Director, an Associate Director, a General Counsel and 230 mediators. The Federal Trade Commission, which often made rulings that were unpopular, during the past twenty years, with business, will have a new Chairman. It is expected he will be Commissioner Lowell B. Mason, the only Republican on the Committee. Mason was Chairman for a short interval, and was displaced by James M. Mead, former Senator from New York, known for his close identification with Labor Unions. Mead, a New Deal Democrat, will probably step down in the near future. His term of appointment expires in 1955. Mason's term expires in 1956. Commissioner Stephen J. Spingarn, Democrat, goes out at the end of this year; and Commissioner John Carson, a New Deal independent, already is out, but is serving until his successor is appointed. The fifth Commissioner, Albert A. Carretta, a Democrat, serves until 1954. In all likelihood Republicans will succeed Carson and Spingarn immediately, thus giving the Republicans the majority on the Commission.

It is also expected there will be the same sort of shift in the National Labor Relations Board, which is presently

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**CONTROLLABLE HUMIDIFIER, AIR WASHER & PURIFIER**  
Enthusiastic buyers increase Century dealers' profits!

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headed by a New Dealer, Paul M. Herzog. Of course, all Departments will have new heads. And with the introduction of Republicans at the head of each Department there is bound to be a great weeding out of New Dealers who have become entrenched during the last twenty years. Many are covered by Civil Service status; but even with this protection it is reasonable to assume that many of them will not wish to continue in the Government.

### Congress' Employees to Change

The new Government will not really begin to go into stride until February and March. Up until Inauguration Day there will be superficial preliminaries and many complicated under-the-surface arrangements and adjustments. Congress itself, which gets here well ahead of the new President, will have many preparations to make and to complete in the new structure of Committees. The dominating authority now goes to those who were the Minority Leaders in the 82nd Congress. By reason of either the defeat or voluntary withdrawal of a substantial number of Representatives and Senators, others will become conspicuous as their seniority places them at the head of Committees or Sub-Committees.

There will be an entirely new personnel of Clerks of Committees, and new Executive Clerks who conduct the housekeeping in the Senate and the House. A number of these employees who have held their jobs for twenty years will go out, and their places will be taken either by Republicans who were their juniors, or by Republicans who will be brought in from the outside. Even the Pages, in large part, will be fresh youngsters drawn from the Republican following. Incidentally, these Pages have an extraordinary opportunity. They see history in the making, they become acquainted with national figures, they make a very substantial salary, and they get a fine and highly specialized education in a school that Congress provides for them. This is one place in Government where those who are responsible provide every advantage to guard the health, morals and welfare of the employee.

### Republicans Taking Over Committee Headships

Appropriations, obviously, are among the most important responsibilities of the Congress. It is expected that Senator Styles Bridges of New Hampshire will head this Committee on the Senate side. His seniority also entitles Senator Bridges to the Chairmanship of the Armed Services Committee; but it is expected he will leave this to Senator Leverett Saltonstall of Massachusetts. Representative John Taber of New York will head the House Appropriations Committee. Taber is known as one of the watch dogs of the Treasury. He is a good businessman for Government finances. He is forthright and utterly frank, and fights for the cuts that he champions. The Finance Committee, which is responsible for tax legislation, in the Senate will be headed by Senator Eugene D. Milliken of Colorado, who is regarded as a superior person, well qualified to head a Finance Committee. He held the job during the 80th Congress.

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Take a quick survey today. How many new homes going up in your area? How many old homes already have warm air ducts? It adds up to a boom market for year-round air conditioning — and it's yours with Typhoon Model S-W!

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ONLY TYPHOON has one-button control — summer or winter, a touch of a button brings cool air or warm... automatically!

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ONLY TYPHOON is a miracle of compactness—takes up less space than any other unit, can even fit into a standard closet!

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SIMPLE TO INSTALL — Just a few quick connections and within hours your Typhoon unit is ready to function.

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# COMING...

**THE ANNUAL DIRECTORY  
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Here's your 1953 Buying Guide—completely up to date in its lists of manufacturers of every kind of product for residential air conditioning, warm air heating, and sheet metal contracting services. It'll give their street addresses, trade names.

Your January issue will serve you throughout the important year ahead whenever you're looking for information on who makes a product, where he's located, whose products various trade names represent.

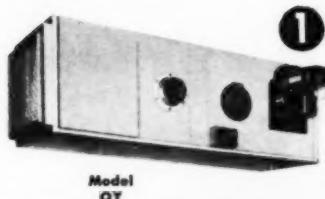
In addition, many manufacturers, in their advertising copy, will give you complete data on their lines, product specifications, applications, etc.

Months of work have gone into checking manufacturers' equipment literature, correcting addresses, adding new names in the field. . . all to give you the most complete and accurate product reference book possible.

Be sure your subscription is renewed, if it is expiring soon, so you won't miss your copy of our important January Directory and Show Number.

**ANOTHER FEATURE OF THIS ISSUE WILL BE A SPECIAL SECTION ON THE 11TH HEATING & VENTILATING EXPOSITION IN CHICAGO IN JANUARY — what's going on, what will be displayed.**

**LOOK FOR YOUR COPY OF THE JANUARY 1953 ANNUAL DIRECTORY AND SHOW NUMBER OF AMERICAN ARTISAN**



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**HORIZONTAL, OIL-FIRED FURNACE**

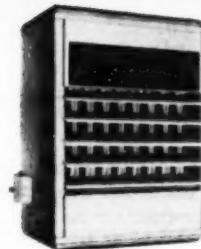
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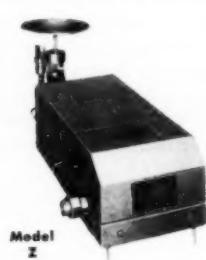
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## Campaigning for Comfort

What this country wants is summer cooling — if the interest displayed at the recent exposition of gas heating equipment at Atlantic City is any criterion. Here all varieties of gas consuming equipment were on display, but heating equipment dominated the theme of the displays. Many of the exhibitors had glass paneled models of their equipment connected to summer cooling packages and this is where many of the big crowds were found.

The hot sticky days of last summer may just be a memory now that the winter has set upon us with its windy cold days, but warm air heating dealers whom we interviewed recently throughout New England and other eastern states indicated they are planning their next summer's sales campaigns now.

At the Gas Appliance Manufacturers' Exposition we talked with warm air heating contractors, dealers and manufacturers' representatives. Everyone wanted to know more about the equipment being displayed and the question asked most often was "Can it be adapted to summer cooling?"

One representative for a manufacturer that produces both boilers and furnaces and who had both types of equipment on display, told us that four out of every five dealers that entered his booth showed interest only in the warm air heating equipment because it was adaptable to year round air conditioning systems.

Much of the cooling equipment is being made in a compact package that fits either in the return air duct or the supply duct. Many of the refrigerating units are of the sealed type, making it possible to replace them by disconnecting the electrical leads and removing the few bolts that hold the equipment to the housing.

The average residence will require either a two or three ton package conditioner. A number of manufacturers are supplying the three ton package with two 1½ hp units and the two ton package with two 1 hp units. Each of the cooling units is controlled in such a manner that the two will not start simultaneously, in order to reduce the electrical demand and prevent operating noise.

Another advantage of the self-contained air conditioning unit that appeals to the heating contractor is that the man now installing heating equipment can make the installation because he need not be a trained refrigeration man. Any servicing that may be required will be limited to adjustment of the controls and other minor external repairs. If the refrigerating unit fails to perform satisfactorily, it can be removed and returned to the factory where trained experts cut open the housing and completely overhaul the entire assembly.

With this type of residential cooling equipment the warm air heating contractor has another service he can offer his customers without having to materially increase his staff.



*American Artisan's editors, staff  
and authors wish you all a Merry  
Christmas and a Happy New Year*

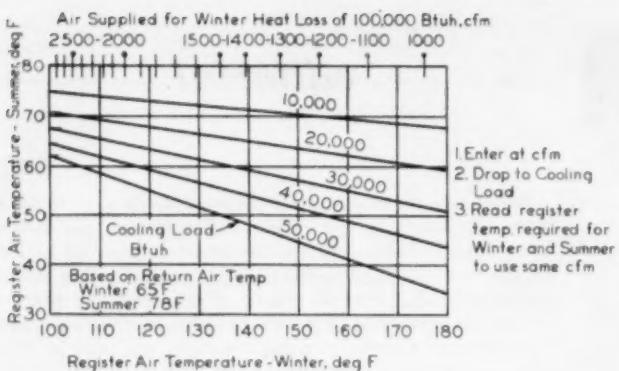


FIG. 1—MAINTAINING A CONSTANT air quantity all year is impractical unless the cooling load is within about 40 per cent of the heating load (from U. of Ill. Bulletin Series No. 321, Vol. XXXVII, No. 28)

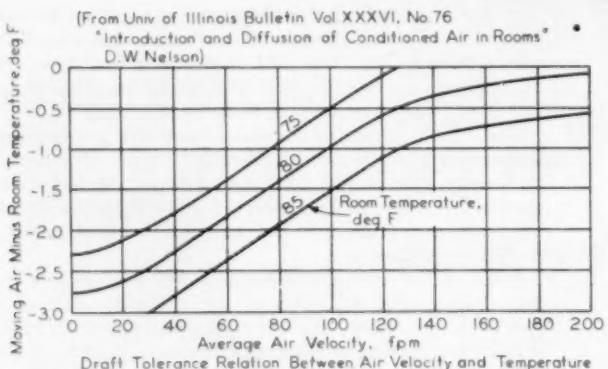


FIG. 2—FOR A GIVEN room temperature and temperature of moving air, a velocity greater than that shown is considered to be a draft

## Distributing Air for Comfort

The air conditioning contractor may take pride in his ability to design and install good ductwork. But he should realize that his know-how regarding air stream patterns in the conditioned space may be even more important in determining the success of his jobs

A CONSTANTLY moving stream of air issuing from a conditioning apparatus in a clean, cool, dry state and returning thereto in a relatively dirty, warm, humid state, is the living part of an air conditioning system. In most systems most of the air is used over and over again. This is accomplished by keeping the air passage between the supply and return of the conditioning apparatus closed. Air leaves the conditioner through supply ductwork which carries it to the conditioned space. In this space the air picks up dirt, heat, and moisture. Then the same air is returned directly to the conditioner through return ductwork.

The conditioned space is a vital part of the closed passage through which air travels. Not only must the amount of dirt, heat, and moisture introduced into the air in this section of its passage be estimated to properly size equipment, but careful attention must be given to how much, how fast, where, and at what temperature air is to enter this part to maintain comfort for the human beings who live and work here.

One of the first questions to be answered on a specific job is, "How much air must we circulate?" A quick answer would be, "Enough to pick up the sensible heat developed in the conditioned space." Of course, that is not anywhere near a complete answer.

### Sensible Heat Related to Air Quantity

Let us examine the subject a little more closely. The relation between sensible heat and air quantity is

$$\text{cfm} = [\text{Heat (Sensible Btu)}] / [1.08 \text{ td}]$$

where air is considered to be at standard density (0.075 lb per cu ft) and td is the temperature of the room minus the temperature of the air as it enters the room. This difference is known as the diffusion temperature.

Obviously, the amount of air circulated is a function of both the amount of heat to be picked up and the diffusion temperature. The next question then is, "What is a good diffusion temperature to assume?" Most self contained air conditioners

supply air at a dry bulb temperature of about 60 F. If room temperature were maintained at about 80 F, the diffusion would be 20 F. At design conditions, diffusion temperatures between 18 and 20 F are quite common.

Although the relationship above will aid one to determine the amount of air needed to handle the sensible load, it does not necessarily follow that this amount will be satisfactory in creating comfort in the conditioned space. It must be kept in mind that air conditioning is the control of air movement as well as control of temperature, humidity, and dirt. Air movement is usually discussed in terms of a certain number of air changes per hour in the conditioned space. Experience in comfort cooling has shown that air movement at the rate of an air change every 10 minutes is most satisfactory. Air movement at a rate much less than one change every 12 minutes seems to create a close feeling of stuffiness or stagnation and may result in noticeable temperature differences in the same conditioned space. Air movement at a rate much higher than one change every seven minutes, often causes distribution problems such as noise and drafts.

Although air quantity calculated from the sensible heat requirements usually results in an acceptable number of changes per hour, certain jobs will require special treatment. For instance, if a greater air change is needed, a bypass of return air around the cooling coils can be arranged to step up the air supplied to the space and yet keep the same sensible heat removal. If the number of air changes is found to be too high, it is sometimes possible to make adjustments to the cooling unit to increase the diffusion temperature and thereby reduce the cfm requirement.

#### Should Air Quantity Be Constant All Year?

Since the air quantity requirement for either summer or winter depends upon register temperature, either quantity may be calculated in accordance with the preceding equation. In the year-round system, the two quantities will not necessarily come out the same, yet they must somehow

#### AIR CONDITIONING FUNDAMENTALS

This is the fourth in a planned series of articles intended to give readers of American Artisan grounding in the fundamentals of air conditioning systems for summer and winter, and to provide specific information on all the component parts. Special emphasis is placed on how to adapt cooling to warm air heating systems.

##### Articles So Far Have Covered:

1. The terms used in the air conditioning field, i.e., air properties, comfort conditions, etc. (September issue)
2. The parts of the refrigeration system and how they work (October issue)
3. How to estimate cooling loads (November issue)
4. How to achieve proper air stream patterns in the conditioned space (this month)

##### Future Articles Will Treat:

1. Duct design — comparison between sizing for summer and winter
2. Condensing units
3. Fans (also motors and fan speeds)
4. Filters — throwaway, cleanable, electronic
5. Cooling towers (also water valves)
6. Equipment selection
7. Electrical control systems
8. Electric controls
9. Sample problem — estimating cooling load and selecting equipment
10. Second sample problem, using different building and conditions
11. Trouble shooting — detecting malfunctioning of summer air conditioning equipment (two articles)
12. Replacement procedures for defective parts in cooling equipment (two articles)

be reconciled. There are practical limitations on register temperatures for both cooling and heating. For cooling, for instance, the design register temperature may be considered as falling between 55 and 70 F whereas for heating it may fall between 100 and 160 F.

Fig. 1 shows the relationship of the same year-round air quantity to summer and winter register temperatures. It is quite obvious that it is impractical to maintain a constant air quantity summer and winter unless the cooling load is within about 40 per cent of the heating load.

Once the amount of air to be circulated has been established, the contractor-designer is faced with the problem of moving the air through the conditioned space in such a manner that it does the heating or cool-

ing required of it with no accompanying annoyances such as drafts or noise. The less attention the conditioning system draws to itself, the better.

#### What Is a Draft?

The human body must continually dissipate heat. Comfort exists when the heat dissipation takes place without one's conscious awareness of it. Air motion, as well as air temperature and humidity, plays a big part in comfort. Air motion which produces discomfort is called a draft, although the same movement of air is not always a draft. An electric fan, for instance, in a hot humid room brings welcomed relief. The same air movement in a relatively cool room could not be tolerated.

Studies have been made which define drafts in terms of air movement

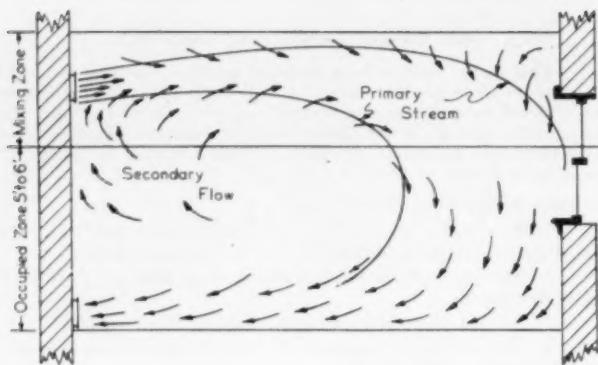


FIG. 3—AIR FLOW PATTERN for a typical sidewall register and return grille is shown here

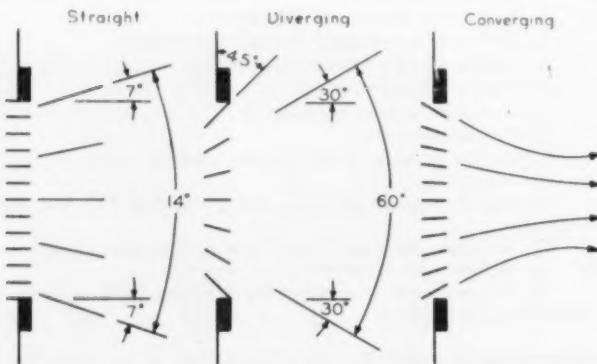


FIG. 4—THE AIR SPREAD pattern varies with the way in which the vertical vanes in a grille are set

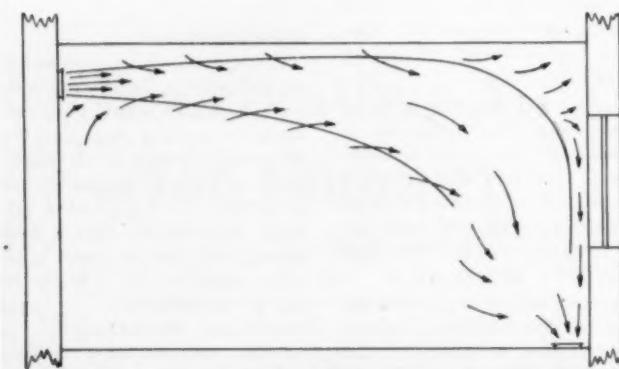


FIG. 5—WITH THIS ARRANGEMENT, flow across the room is not dependent upon initial velocity alone

and temperature differences. Fig. 2 shows the results of one such study. For a given room temperature and temperature of moving air, a velocity greater than that shown is considered to be a draft. Because the curve is based on an average of a number of subjects, each individual will not necessarily find that his own draft tolerance level corresponds with the curve. There are limiting velocities at each end of the curve in Fig. 2. Velocities less than about 20 fpm result in a stuffy feeling whereas those above about 150 fpm disturb light objects such as papers or hair. For general air conditioning work, good practice tends to peg air motion in the occupied zone somewhere between 20 and 50 fpm.

Fig. 3 shows the air flow pattern for a typical sidewall register and return grille. As the air stream at a relatively high velocity (500 fpm is considered a maximum outlet velocity for residences) issues from the register, it entrains with it a certain amount of room air. The mixing or induction process causes the moving air stream to expand and to slow down as it moves across the room. The relationship of initial velocity and rate of induction must be such that the velocity of the moving stream will have been reduced to about 75 fpm before the stream enters the occupied zone.

The rate of mixing of primary and secondary air depends upon the area of contact between the two streams — the more contact area, the more mixing will occur, and the more quickly will the stream be slowed down. A stream of air circular in cross section will have the least surface contact area, hence, the least mixing and farthest travel. A stream with a long narrow cross section will have the greatest surface contact with secondary air, hence will create rapid mixing and have more limited travel.

#### Air "Throw" Defined

There are three characteristics which are used to describe an air stream issuing from a grille or register (a register is a grille with an attached valve or damper). These

are throw, lateral deflection, and vertical rise or fall.

The distance an air stream travels until its velocity drops to about 75 fpm is known as its throw. The effect of the cross section of the air stream on its throw has already been mentioned. It is not possible to write an exact mathematical equation for throw that will be valid for all grilles, but investigations have proven that the following equation is approximately true for most average applications:

$$\text{Throw (ft)} = \text{Factor (F)} \times \text{Velocity at grille (fpm)} \times \text{Square root of grille core area (sq in.)}$$

The factor in the above equation depends upon the amount of lateral deflection of the air stream by the grille. It varies from about 0.8 for vanes set straight to about 0.4 where vanes are set for approximately 55 deg deflection.

#### Air Spread, Rise, and Fall Considered

Lateral deflection, also known as spread, is the name given to the fanning out of an air stream as it leaves the grille. There are three ways of setting vertical vanes in a grille. They can be set straight, toward the outside of the grille, or toward the center of the grille. Fig. 4 shows the effect on the air stream with each one of these settings. It will be noted that even with the vanes set straight, the air stream will diverge with an angle of about 11 deg.

A diverging setting of the vanes will, of course, greatly increase the spread of the air stream. The effect of this is to cause a much quicker mixing of primary and secondary air with a consequent more rapid lowering of velocity and reduction of throw. It should also be noted that a grille with vanes set at an angle will have less free area than the same grille with the vanes set straight. The effect of this is to reduce the air quantity delivered at a given static pressure.

Setting the vanes for a converging stream makes the stream converge immediately beyond the grille, but the spread which then takes place is somewhat greater than that which takes place with straight vanes.

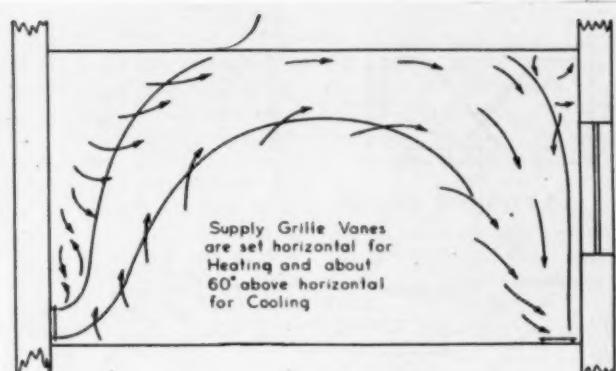


FIG. 6—WARM AIR is discharged in this way from a horizontal baseboard (inside wall). Velocities above 300 fpm cannot be used

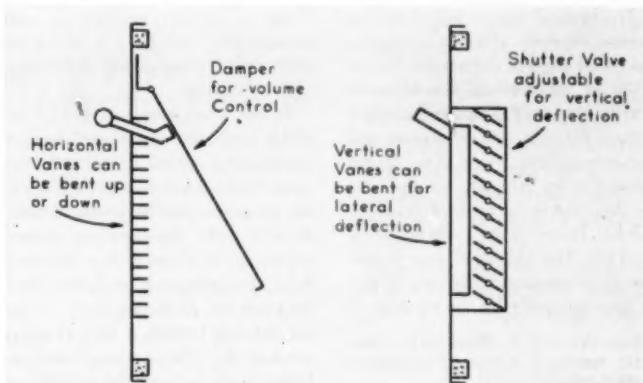


FIG. 7—THIS SINGLE SHUTTER, flexible fin register is suitable for either heating or cooling (not both) where lateral deflection isn't needed

FIG. 8—MULTI-SHUTTER, flexible fin registers such as this can be used for either heating or cooling in either high or low positions

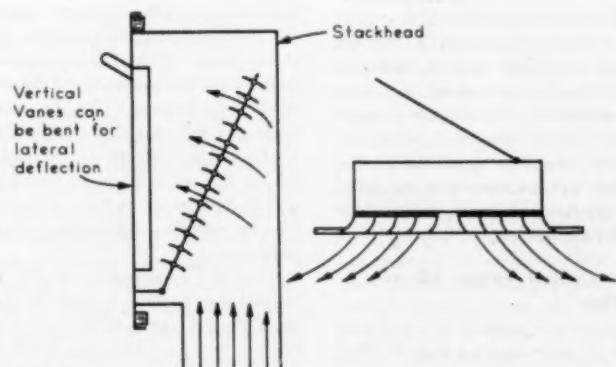


FIG. 9—THE MULTI-BLADE valve is pivoted back and acts as a set of turning vanes

FIG. 10—THIS CEILING DIFFUSER has a damper for volume control

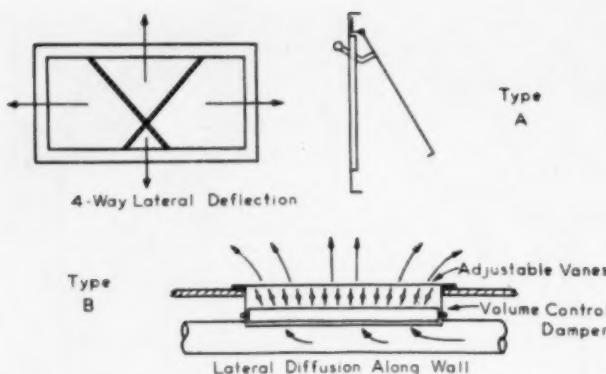


FIG. 11—REGISTERS FOR PERIMETER systems can be used for side-wall (Type A) or floor (Type B) installations

The vertical rise or fall of the air stream depends upon two factors: the initial angle of discharge from the grille or register and the effect of gravity due to the temperature difference between the air stream and the surrounding room air. If the vanes are set straight, for instance, the drop due to the angle of discharge will be: Throw  $\times$  tan 7 deg or Throw  $\times$  0.123. The additional drop or rise due to temperature difference is given approximately by the equation

$$\text{Drop (ft)} = [5 \times (\text{Room temp} - \text{Supply temp}) \times (\text{Throw, ft})^{1/2}] / [\text{Grille outlet velocity (fpm)}]$$

If warm air is being considered, the drop due to temperature difference will come out negative, indicating an actual rise rather than a fall. The effect on the air stream of both factors is found by adding them for cool air or subtracting them for warm air. This value is useful in determining where along the throw the air stream will enter the occupied zone. If the descent is made too quickly, the velocity of the moving stream will not have dropped below the 50 fpm maximum required for draft-free comfort.

#### How Grille Location Affects Flow

Let us now proceed with a discussion of grille location and its effect upon operation both summer and winter. Figs. 5 and 6, in addition to Fig. 3, show three basic flow patterns for inside wall heating grilles.

From a comfort standpoint, each arrangement can be judged by its effect upon temperature differential and air motion.

In the arrangement of Fig. 3 the outlet is placed above the zone of occupancy with the return grille beneath in the same wall. For heating, the vanes are usually arranged horizontally. As the incoming heated air enters the room its first tendency is to rise because it is lighter than the room air. As the air moves across the room it induces a flow of room air into it. This decreases the velocity of the stream and in diluting it causes a lower temperature, both of which factors make the stream turn toward the floor. For this arrangement the initial velocity is rather critical. It must be just sufficient to project the air stream across the room before it drops to the occupied zone. If the velocity chosen is too low the warm air will not reach to the exposed wall and uneven heating of this part of the room will result. If the velocity is too high, the air will move down the opposite wall and return through the occupied zone at velocities approaching draft conditions.

When the arrangement of Fig. 3 is used for cooling it exhibits the same general characteristics that it has for heating. However, because the air supplied is cooler and heavier than the room air, it does not have the buoyancy of the warm air and will tend to enter the occupied zone

before it reaches the opposite wall. It may be necessary, therefore, to correct for this by turning the vanes up slightly.

The arrangement of Fig. 5 for heating is an improvement over Fig. 3 in that the supply velocity is not as critical. Lower velocities than those required by the arrangement of Fig. 3 can be used since the flow across the room is not dependent upon initial velocity alone. The lower pressure area surrounding the return grille tends to aid the flow toward it. Higher velocities than those permissible with the arrangement of Fig. 3 can be used since no return flow through the occupied zone is required. Cool air from the exposed wall during the heating season can be taken directly to the return grille without having to mix and flow back across the room.

When the arrangement of Fig. 5 is used for cooling, good results will be obtained. The only adjustment needed may be a slight upward deflection of the grille vanes.

#### Baseboard Grille Used on Inside Wall

Fig. 6 shows a horizontal baseboard discharge of warm air from an inside wall. The return grille is located opposite the supply in either the floor or the baseboard. Satisfactory heating is achieved with this arrangement, using fairly low velocities, because the buoyancy of the warm air makes it rise and mix with room air before it flows into the occupied zone. Velocities higher than about 300 fpm cannot be used with this system since the air would not have a chance to rise and mix before it moves forward across the room.

The baseboard grille with horizontal discharge is not satisfactory for cooling for quite obvious reasons. Cool air would not rise and mix with the room air. It would travel across the floor to the return grille, creating possible drafts and stratification.

The case for the baseboard grille in air conditioning is far from hopeless, however. Very satisfactory results have been obtained simply by turning the vanes upward until the air stream is deflected up at an angle of approximately 60 deg. The ve-

lacity can be increased considerably over the maximum allowable for heating with the horizontal discharge. Care must be taken, however, to prevent the air from hitting the ceiling with a velocity high enough to deflect it downward into the occupied zone. It should hit the ceiling and flow across the room above the occupied zone as it mixes with room air in a manner similar to the arrangement of Fig. 5.

### Air Supplied from Ceiling

The three grille arrangements discussed so far have all had the supply grille located on the inside wall. There are two other possible locations which have become very popular since the war with the introduction of the mass-produced, low cost, one floor house. One of these locations is the ceiling, and the other is the floor or baseboard outlet at the outside wall which is associated with perimeter heating.

The ceiling location is popular in some sections of the country where attic furnaces are used. The attic distribution system is low cost as round duct can be used and run directly to the ceiling of each room. The successful use of a ceiling outlet for heating depends a great deal upon the selection of the diffuser. Sufficient induction of secondary air must take place to thoroughly mix the warm air supply with the room air; otherwise, stratification along the upper part of the room will take place.

Generally speaking, however, ceiling diffusers provide excellent distribution resulting in rapid diffusion at a high level. Baseboard returns along the outside wall aid in assuring proper flow. For cooling duty the ceiling diffuser is second to none.

### Perimeter Diffusers Blanket Outside Walls

Perimeter distribution is a relatively recent concept of warm air heating. It is most popular in basementless homes where the duct can be cast right into the concrete slab. Supply outlets are located around the outside walls where 60 to 80 per cent of the heat loss occurs. Diffusers are avail-

able for either floor, baseboard, or low side wall installations. It is customary to use large return grilles close to the return air side of the furnace, which is usually centrally located. These can be mounted in the high inside walls or ceiling.

Perimeter-type diffusers are designed to blanket outside walls with a layer of warm air. In addition, certain designs also spread a smaller amount of air across the floor. Because the flow is primarily up, perimeter systems give excellent performance when used for cooling duty.

In the preceding discussion three basic types of air distribution systems were discussed. These were as follows:

1. Systems where air is supplied from inside wall
2. Systems where air is supplied from the ceiling
3. Systems where air is supplied from perimeter of house

Special registers have been developed for each of these applications. Some can be used for heating alone whereas others are adaptable for both heating and cooling. Figs. 7 to 11 show the basic features of each type.

Fig. 7 shows a standard register with horizontal louvers and a single shutter valve control. The louvers must be bent manually one by one, down for heating or up for cooling. There is no provision for lateral deflection. The shutter can be used for volume control only. Because of its inflexibility, this register is suitable for either heating or cooling, where lateral deflection is not needed, but not both in the same system.

### Flexibility of Registers Varies

The register shown in Fig. 8 can be used for either heating or cooling in either high or low positions. It has vertical louvers, which are bent manually one by one for lateral deflection, that should be suitable for either heating or cooling. In addition, it has a multi-shutter valve that can be readily adjusted with a lever either down as much as 45 deg for heating or up to any angle required for cooling. The valve can be used for tight shutoff.

Fig. 9 shows an advance one manufacturer has made over the principle

shown in Fig. 8. In this register the multi-blade valve is pivoted back into the stackhead where it acts as a set of turning vanes. Since the normal turbulence of the stackhead with conventional registers is greatly reduced, resistance becomes less and air is distributed much more uniformly over the face of the grille. In some cases it is claimed this permits the use of smaller or fewer registers. Operation and flexibility are similar to the register of Fig. 8.

Fig. 10 shows the conventional type of ceiling diffuser. These are available with all rings flush or with each succeeding inner ring slightly lower. The former type has a flatter distribution characteristic than the latter. Dampers are available for volume control.

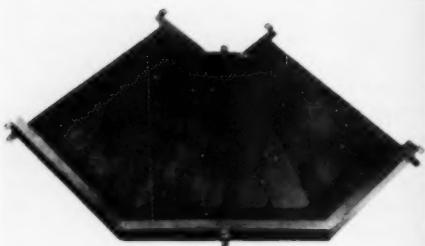
### Perimeter Registers for Sidewalls and Floors

Fig. 11 shows two types of registers used in perimeter systems. Type A is used for low sidewall application, whereas Type B is used for floor outlet.

Type A is designed to spread air out over the outside wall. Note the louver proportions which direct rather a large amount of air laterally, a medium amount straight up and a small amount downward toward the floor. The louvers in this grille are pre-set and do not need changing from heating to cooling duty. A single shutter valve is provided for volume control.

Type B is used for floor mounting directly on the small round ducts used for perimeter heating. Vanes are adjustable for spread across the walls.

There are no rules for air distribution that cannot be broken except perhaps the one that warns against drafts in the occupied space. Almost any duct system that supplies air to and removes air from a conditioned space can be made acceptable by giving careful thought to the manner in which air is distributed in that space. Analysis along the lines discussed in this article should enable a contractor to evaluate the probable effect of the unavoidable compromises he may be called upon to make.



INSIDE THIS SECTION of heavy duct, all joints must be smooth to prevent chafing



... SO THAT THIS DUCT RUN of No. 12 gauge iron can safely convey power cables from fuse boxes to terminal panels

## Sheet Metal Troughs Protect Power Cables

... and reduce costs in power plant wiring. These ducts are just one example of the many special jobs which can be tackled by sheet metal shops

NEW IDEAS and new applications of old ideas — these are important factors in the success of any sheet metal shop. The Berks Metal Products Co., Inc., of Reading, Pa., recently demonstrated its adaptability with the successful fabrication of sheet metal ducts as troughs for carrying power cables. This led to a substantial volume of business, and is continuing to produce a steady flow of orders.

Gilbert Associates, Inc., of Reading, Pa., electrical engineers, formulated the idea, and the Berks Metal Products Co. worked out the details of construction. Gilbert's problem was one of reducing costs in power plant electrical wiring, of eliminating the costly installation of conduits wherever possible. A sheet metal trough, they believed, might be the answer, since it would hold many more cables than the conduits in general use, and installation of these troughs would be more rapid, hence a labor saver. The ducts, obviously, had to carry a heavy load of copper wire, and therefore

had to be firm and rigid. On the other hand, it was important that the ducts themselves be as light as possible.

### How Ducts are Fabricated

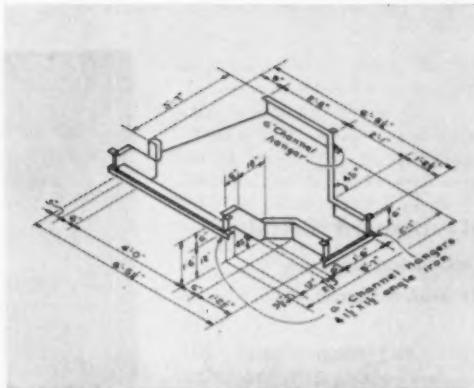
After some experimentation and testing, No. 12 gauge iron was found to be ideal for the job, and all installations to date have been made of this gauge metal. The ducts are made either 6 or 8 in. deep, and at the starting point are from 1 to 6 ft wide. As different takeoff points are reached, the ducts are reduced in the same manner as any conventional ducts. All hangers are welded to the ducts in positions to conform with the structural steel members of the building in which they are to be installed.

In the course of fabrication — since each job is tailor-made — Berks Metal Products is faced with the problem of making reducing pieces, ells of many different angles, tees, Y branches, jump pieces, and the like.



BRANCH TAKE-OFFS ARE HANDLED

... by branch lines like this, braked for a 45 deg bend



... as planned in this scale drawing, showing take-off

The finished ducts receive one shop coat of high grade primer, and are given a finish coat in the field after installation to blend with the color scheme of the power plant for which the work is being done.

The ducts are formed on a press brake wherever possible. Any that cannot be formed in this manner are arc welded to get the desired shape. The ducts are made in 6 to 8 ft lengths and have an angle iron brace tack-welded across the bottom at intervals of 3 ft or more depending upon the width of the duct. Channel iron brackets are welded along the sides, drilled for  $1\frac{1}{2}$  in. hanger rods. The ducts have a No. 16 gauge iron cover with a 1 in. flange on each side. These covers lie on the ducts and are not fastened in any way, thus making the cables easily accessible at all times. The ducts are not ventilated.

#### Interior Must be Smooth

Care must be exercised in the fabricating of the cable ducts in order to avoid all roughness and sharp edges on the interior surfaces. It is highly important that the inside be as smooth as possible so that when the cable is drawn through it, there is no possibility of its becoming cut or scuffed, thereby causing a short circuit when the installation is put into service. General neatness is also important because visitors frequently tour the average power plant; and since these ducts are exposed to view, when properly made they add a touch of streamlined modernity.

Gilbert Associations has made quite a number of these installations, which Berks Metal Products Co. has fabricated, the smallest of them requiring 12,000 lb of material, and the largest, 62,000 lb.

#### Other Special Jobs Tackled

Berks Metal has developed other profitable specialties as well. For example, W. L. Eshbach, general manager of the company, was called upon to design a box for drying battery plates for dry charging. Another sheet metal contractor had previously designed a box for the battery company which, after six months of use, was no longer effective.

This box had to be so constructed that it would withstand the corrosion caused by drastic and rapid changes in temperature combined with acid fumes. A number of tests were made with various stainless steels, and Carpenter 20 finally was selected. The company put the dryer into service two years ago, and it is still in excellent condition, though it operates 16 hours a day.

Another unusual problem was brought to the company recently by a baker who wanted to convey pretzel nuggets through an air duct instead of by means of a conventional belt. After numerous attempts, Berks Metal found that, using a very high velocity of air, the nuggets could be carried with a minimum of breakage, and with fast air expansion, could be dropped properly into bins on the packing machines.

This company is typical of many sheet metal shops which have expanded greatly in a few years due to aggressive sales programs and willingness to tackle difficult problems. It operates a general jobbing shop, installing heating systems and ventilation, and engaging in industrial sheet metal work. The company was organized in 1949, and now employs about 25 men.

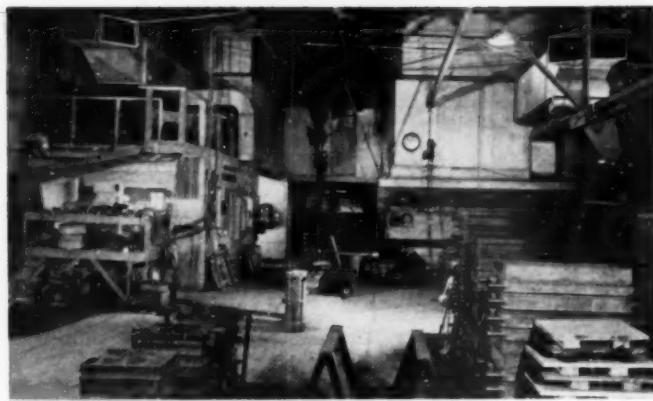
#### CONVECTION AND PANEL HEATING COMPARED

THE RESULTS of an extensive test comparing convection and panel heating, conducted in the Warm Air Heating Research Residence No. 2 at the University of Illinois, are presented in Bulletin No. 401. The residence, which was equipped by the National Warm Air Heating and Air Conditioning Association, was a one-story frame structure.

The convection system was a conventional forced warm air heating system with high sidewall registers. The results obtained with this system were compared with those of a warm air ceiling panel system in which no heated air was introduced into the rooms.

The two systems were connected to the same furnace, and operated alternately through the heating season. Their performances were remarkably alike in regard to air temperatures and average surface temperatures of the rooms.

By **Bernard Czymbor**  
Installation Engineer  
**Jackson & Church Co.**



SUSPENDED OIL FIRED HEATING unit at right serves pouring room and rear shipping room. Furnace at left has return air duct for recirculating air during non-working hours



THIS CLOSE-UP of one of the units shows how the angular plenum directs tempered air into working area

## Furnaces and Ducts Guard Health

### Two Suspended Furnaces Installed

Two oil fired suspended furnaces, each with a 450,000 Btu output and a capacity of 5000 cfm of tempered air, were installed at corners of the 22 ft ceiling parallel to each other and at the opposite end of the room from the melting area. The only ducts needed were lead-ins for bringing outdoor air into the furnaces, angular plenums to throw the warm

air in the desired directions, and a piece leading from one of the units to a rear shipping room.

It was determined that the new ventilating system should exhaust 22,000 cfm of air from the plant — meaning that 12,000 cfm of air had to enter the building by means other than the furnaces. This was provided for by installing two new wall fans close to the ceiling and near the melting area (which pours off enough

heat to warm that section of the building.) Through a curtain arrangement, untempered air from the outside is introduced into the building so that it blends with the warm air around the canopy of the melting room before it has a chance to come in contact with the occupants.

While the area adjacent to the melting room receives ample warmth from the melting furnaces' heat plus the fresh air from the overhead fans,



MOST OF THE FUMES AND SMOKE originating from the pig molds during pouring operations are caught by these overhanging ventilators before they are able to seep out from under the canopy



FUMES ARE KEPT WITHIN low hanging canopy and are carried off by duct work suspended over molds. Melting pots are at right background

## ... of workers, in a foundry which suffered from a combination of lead fumes and an outmoded ventilation system

the balance of the working area is given a constant supply of fresh warm air because the two suspended units delivered their output into the room — keeping any fumes from the opposite end from floating out of their restricted area.

### Heating Building During "Off" Hours

Because the plant does not work at night during the winter months, it is

not necessary to keep a constant flow of air coming into the building during the "off" hours. The plant is moderately heated at such times by having the makeup duct on either unit closed off and a damper on another duct on the same furnace opened in order that the air inside the building can be drawn back into the furnace and recirculated. A bulb thermostat in the plenum of each unit makes it possible to keep the

desired temperature during the day. The unit not needed during the "off" hours is shut off completely.

During the summer months when heat is not needed, the suspension units continue to act as ventilators. Fresh air is circulated through the building by keeping the blowers on and the burners off.

The new duct work was installed by the Frimberger Sheet Metal Co.

### AIR CONDITIONING CHANGING HOME DESIGNS AND PEOPLES' HABITS

AIR CONDITIONING will not only increase home sales next year, but will also affect the designs of homes and peoples' habits, according to Frank Hudik, president, Comfortair Co.

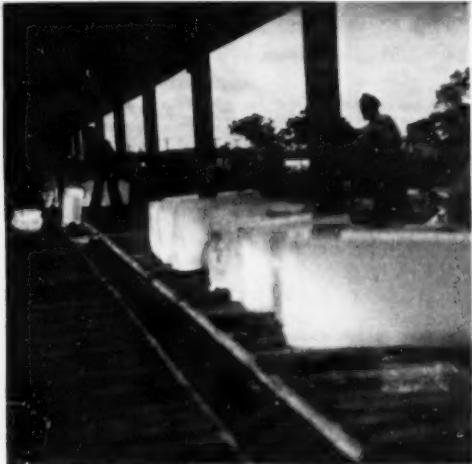
In addition to the primary problem of designing new homes around air conditioning units, architects will probably also call for such items as pastel shades of roofing and shingles to aid in heat refraction, smaller window areas to cut down heat loss, and use of venetian blinds to deflect heat, according to Mr. Hudik.

As to habits, housewives will find that air conditioning will more than halve their dusting chores, leaving more leisure time. Mr. Hudik points out that this will mean an even greater daytime TV audience, and, in fact, the whole routine of the family's day may be changed.

With air conditioning supplying fresher and cleaner air, windows will be opened less frequently. In fact, Mr. Hudik foresees a dust-free air conditioned home that can be obtained by having all the windows sealed. However, he states that the psychological barriers to this might mean that no such home will be marketable in the near future.

### CEREMONY COMMEMORATES U.S. STEEL'S BILLIONTH TON

A CEREMONY at U.S. Steel's open hearth furnace No. 65 in Homestead District Works recently commemorated the pouring of the company's billionth ton of steel. According to the company, it took 51 years, 7 months and 27 days, and the combined efforts of tens of thousands of men and women for the corporation's mills to become the first in history to reach that tonnage.



JUST AS blocks of ice store "cold," the mass of a residence stores heat . . .



. . . LEVELING OFF the cooling load as a flywheel levels off pulsation in machinery

## Take Advantage of "Flywheel" Effect

. . . when you cool a house

**The contractor air conditioning a residence must take into consideration the special characteristics of such an application. In residences, the heat storage capacity of the mass of the structure tends to level off the cooling load peaks and to spread the load over the 24 hr period. This "flywheel" effect may mean that residential cooling equipment smaller in capacity than that needed for the peak load will be adequate for the job**

THROUGH THE YEARS it has been found that residential cooling equipment selected in exactly the same manner as commercial cooling equipment, is — or appeared to be — oversized. When leading air conditioning engineers began to evaluate all the factors involved, they found that the heat storage capacity of residences differs in important respects from that of commercial buildings.

This has pointed the way to the selection of smaller cooling equipment for residences, reducing the cost of in-

stallation and making it possible to adapt summer cooling to existing warm air heating systems.

As described by W. G. Senft, American Radiator & Standard Sanitary Corp., the heat storage capacity in commercial installations is affected by one main factor: the principal load is generally from within the structure. The fact that external loads are not necessarily felt at the time of their peak occurrence makes little difference. In residential air conditioning, however, the internal loads are relatively small and stable, while the external heat loads are larger and more variable. In a residence, then, the heat storage capacity of the mass of the building tends to level off the peaks of the cooling load and spread that load over the whole day. This is the "flywheel" effect. According to Mr. Senft, it indicates that equipment smaller in capacity than that needed for the load calculated on a peak basis would be entirely adequate.

Amplifying this point, C. L. Ringquist and M. L. Hoglund, The Trane Co., point out that in residences, the amount of "heat lag", (the heat storage in walls) depends upon the type of wall construction. In homes

where thick stone or brick walls prevail, heat storage is greater than in homes where 2 x 4's make up the wall thickness. The scope of the "flywheel" effect will therefore vary with each specific application.

### **Smaller Equipment Desirable**

When the dehumidification aspects of residential cooling are considered along with "flywheel" effect, it becomes apparent that the smaller capacity equipment is not only adequate, but desirable, according to Mr. Senft. Since the "flywheel" effect actually results in a load less than peak calculations, large equipment selected for peak requirements produces frequent off cycles, he states. When the equipment stops, the mass of the structure keeps temperatures below the thermostat cut-in point for long periods, at which time there can be no dehumidification.

Since there is no "flywheel" effect on the moisture content of the air, as soon as the equipment stops the high outdoor vapor pressures tend to equalize the low indoor vapor pressures, causing the humidity to reach unsatisfactory levels very quickly. In order to maintain comfort conditions during warm, humid weather, the cooling equipment should operate as continuously as possible. This will prove as beneficial in summer air conditioning as continuous air circulation is in winter air conditioning, Mr. Senft concludes.

### **Humidity Must Be Kept Down**

Robert H. Lodge, Murphy & Miller, Inc., also stresses the importance of keeping humidity at low levels. He points out that if the humidity is low, comfort conditions will exist regardless of whether the temperature in the space is 81, 82, or 78 F. The dry bulb temperature, he feels, is not as important as the wet bulb temperature.

Having a smaller unit operating constantly holds humidity at a constant level because the machine is running and the coil is kept cold. Mr. Lodge emphasizes that oversizing the machine results in widely varied humidity, though the dry bulb temperature might be held at a reasonable level such as 78 to 79 F. He states that this dry bulb temperature, combined with high humidity resulting from a machine which has cycled and has a warmed up coil, will not be as comfortable as if the dry bulb temperature were 82 F and the humidity held at 50 per cent.

### **Can Rely Too Much On "Flywheel" Effect**

However, the industry can become too careless in relying on "flywheel" effect, thereby reducing customer satisfaction, according to G. K. Marshall, General Electric Co. Loads, he states, are ordinarily calculated on the basis of indoor conditions of 80 F dry bulb and 50 per cent relative humidity, and the outdoor conditions given in the ASHVE Guide. Actually, people are not satisfied with these conditions, he states. For real comfort, he feels dry bulb has to be in the order of 76 F with a relative humidity of about 50 per cent. The

ASHVE comfort chart indicates that the optimum inside conditions are considerably below 80-50.

The load in commercial establishments is varied considerably by the internal heat load, and as a result, the total load is relatively independent of the outdoor temperature. Consequently, the load varies with occupancy, lighting, etc., and a commercial establishment can well hold 76 F most of the time regardless of outdoor temperature.

On the other hand, the indoor conditions of the residence must reflect (except for thermal capacity "flywheel" effect) the outdoor temperature. Therefore, when a residence is designed for a temperature difference between the outdoor and indoor of, say, 15 F, which is typical for most of the U.S., and the customer expects the temperature difference to be 19 to 20 F when the outdoor design temperature is reached, the customer can be disappointed in his air conditioning.

### **Small Units Maintain Comfort**

Alwin B. Newton, Acme Industries, Inc., cites some specific installations in which smaller sized units have produced greater uniformity in relative humidity, and therefore, greater comfort.

An uninsulated frame house in Minneapolis showed a calculated heat gain of 49,000 Btu per hr (or 4 tons) when calculated from the 1936 ASHVE Guide data. Mr. Newton installed a 2 hp air cooled system and over a period of seven cooling seasons, there was never a temperature in the house as high as 80 F. Temperatures in the area frequently reach or exceed 100 F.

A house in Dayton, of insulated frame construction and partial stone exterior, showed a heat gain of approximately 83,000 Btu (or over 7 tons), based on the 1941 ASHVE Guide. The load was also checked by methods in use by four major air conditioning companies, all of which showed about the same load. A 3 hp unit, arranged to be either air or water cooled, was installed. Over a period of three summers, during which temperatures were electronically recorded from 32 points in the house, the highest temperature recorded was 79.6 F. In extreme weather, the unit would sometimes start as early as 5 or 6 a.m. and run continuously until 9 p.m.

The frame house in which Mr. Newton lives shows a heat gain of about 137,000 Btu (11½ tons) using the 1949 ASHVE Guide. For the past three summers, including the extremely hot spell in July, 1952, the temperature never quite reached 80 F. A 5 hp water-cooled unit is installed.

### **Another Example Cited**

The performance of Mr. Senft's summer air conditioning system, described in the August American Artisan, illustrates how the "flywheel" effect operates.

The cooling system consists of two 1 hp hermetically sealed circuits controlled by a two-stage duct thermostat, so that only as much cooling capacity is used as is

*(Please turn to bottom of page 49)*



By going out to meet them . . . and bringing them to meet him

## Contractor Tells Public About Himself

**Lawrence E. Gichner, Gichner Sheet Metal Works, creates good publicity for himself and his firm by appearing on a weekly television program and conducting tours through his plant. Here he offers other tips on how contractors can tell their story to the public**

THE ULTIMATE end of public relations is to establish confidence and get a ready acceptance for yourself, your product, and your service in order to make sales. In spite of talk one may hear to the contrary, the purpose of good public relations is to sell, sell, sell.

I know a portrait artist who charges from \$5000 to \$3000 a picture, who engages the services of a public relations man. An antique show that lasts a week likewise employs a public relations man. A large bank in my home town has a woman on its permanent staff doing public relations work; several large department stores likewise have employees who devote their full time exclusively to creating good will for their organizations.

You can employ a public relations man or learn to do your own publicity, as I have done. By observing a few easy rules, some of which I learned "the hard way," you will be amazed what can be accomplished.

### Advise Newspapers In Time

Phoning a newspaper shortly before or just shortly after an event is one good way of having your story passed over. In spite of the rush, rush atmosphere of a newspaper office (not quite as fast as the movies give the impression) it takes time to get things done.

A good week in advance is not too soon to send a notice to a newspaper. Radio and television stations like two weeks notice so they can prepare. If you send

your material at the last minute, you may strike a day on which their program is heavily crowded and your story isn't used. If you let them have your material early, they can use it on a day when they are not loaded.

No article is quite so thrilling to read as the one about one's own family, or firm, or self — but is it news? If it were a story about someone else's family, firm, or self, would it be interesting? That is the important question you must ask. Would you read it, and if you did would it hold your interest?

Also, with photographs the question you must ask is "Is it interesting"? It may be clear, sharp and an excellent shot, but thousands of top quality pictures daily hit the waste paper baskets of newspaper offices throughout America for the simple reason that they don't make news.

### Important to Present Story Properly

Your regular stationery is acceptable for sending in a story, and don't hesitate to sign your story, and give your firm affiliations. Your signature assures the newspapers that someone in authority is responsible. It is smart to include your telephone number for ready reference, verification, and an opportunity to get additional data that may be desirable. Typed and triple spaced sheets are preferred by the editors who must select the material to be published.

Here are some pointers to remember that will be most helpful:

1. Tell your story in the first paragraph.
2. Get it all on one page.
3. Look for the unusual, the human interest story.
4. Look for the humorous.
5. Avoid personal telephone calls and visits.
6. Get action into your pictures and avoid the obviously posed ones. It takes longer to process a picture than a story, so get it to the paper in plenty of time.
7. You can never be sure that a newspaper will send a photographer to cover your event. If you want to be sure, and are willing to invest a little money, there are plenty of free lance photographers available.

The same rules apply to television and radio with the addition that your release should be friendlier, more personal and, if it is an announcement, should be kept within 40, 60 or 100 words.

But don't think just in terms of the larger newspapers. Your story in a community sheet, church paper, Chamber of Commerce bulletin, trade publication, or civic organization pamphlet can yield excellent results.

Glance over this list which may give you some ideas for a release that will highlight your organization.

1. Moving to a new address and building.

## FLYWHEEL EFFECT —

(Continued from page 47)

needed to take care of the sensible load, yet moisture is constantly being removed to provide proper dehumidification.

According to commercial cooling calculations, the peak cooling load on the residence should occur between 3 and 4 p.m. On this basis, the equipment should be delivering its full capacity at that time. Actually, the second circuit in the system seldom cuts in before 6 or 7 p.m. At that hour, the radiation load has disappeared and shortly thereafter, the transmission gains through the walls due to outside air temperatures may even be in reverse. In actual operation, the system is removing heat in the off-peak periods that has been stored in the building mass during peak periods. The result, according to Mr. Senft, is that excellent comfort conditions are maintained with a relatively small capacity system.

## Existing Duct Work Used for Cooling

Mr. Senft points out that lower capacity systems not only mean lower first costs, but further increase the potential for summer air conditioning of residences because smaller equipment requires less air volume and the ducts of good winter air conditioning systems will be adequate for the job. Mr. Lodge has also pointed out that, "The most important aspect in using new machinery in existing warm air systems is the fact that if you use a smaller size machine it thereby enables you to utilize the existing duct work that is in the space."

Investigating this question, engineers at the University of Illinois recently installed an undersized cooling unit in a research residence, connecting it to the regular

2. Addition to your plant.
3. Grand opening of new quarters.
4. Award of a large contract.
5. Election of new officers.
6. Manufacturer of a new product.
7. Gift from your employees to a worthy cause.
8. Off the job hobby of one of your fellow workers.

## Extra-Curricular Efforts Get Results

The person who does not know you can't do business with you. One of the purposes of public relations is to make yourself known and your product acceptable.

I find joy in combining the hobbies of lecturing and photography in a series of colored slide presentations that weave in a third pleasure, that of travelling.

I present these lectures, entitled *Little Known Spots in Well Known Washington, Europe Today, Paris on Her Two Thousandth Birthday*, and *Little Known Places in Well Known America*, before luncheon groups, church groups and civic organizations. In these talks I slip in remarks identifying myself as being in the roofing and sheet metal business.

How much business is brought in as a result of these efforts is practically impossible to measure, but I do know it does help in no small degree.

heating ducts. Though the unit was considered one size too small, it brought temperatures down to 75 F while the outside temperature was 95 F.

## Must Develop New Methods

The residential air conditioning industry must develop its own practices applicable to cooling as it has done with heating by a direct approach through research, according to Mr. Senft.

On this point, Mr. Lodge states that in calculating loads, we are oversizing. Theoretically, he feels, our load calculations are unsound. They represent only an instantaneous load, which is relatively unimportant. The mathematics of calculating a proper load would involve some calculus. It would involve integrating the sum of all the instantaneous loads for a 24 hr period, and then arriving at a mean for the entire period. This type of a load would represent an accurate figure and probably would coordinate very nicely what we have learned through trial and error.

Mr. Lodge feels the day will come when we will have a very simple method for calculating an accurate load for a home, but believes that the installations of machinery will long precede the theoretical "know how" of calculating the load. At present, he feels, the manufacturers and distributors of cooling equipment arrive at size specifications by all types of trial and error methods, but in spite of this, manage to maintain comfort conditions in the homes serviced. Meanwhile, he points out, the warm and cold air research homes, such as those at the University of Illinois, are being utilized to develop the data necessary for evolving that simple and exact method which the industry may look forward to using in the future.

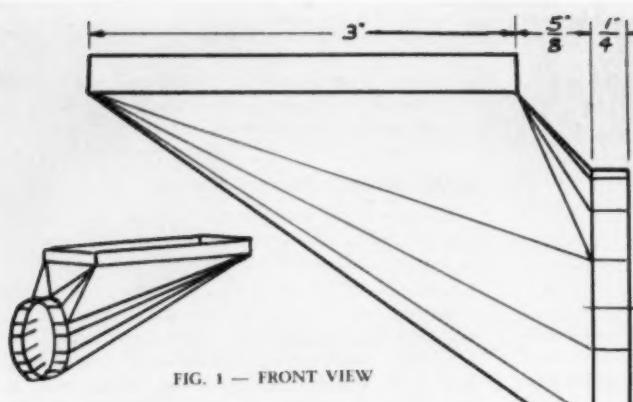


FIG. 1 — FRONT VIEW

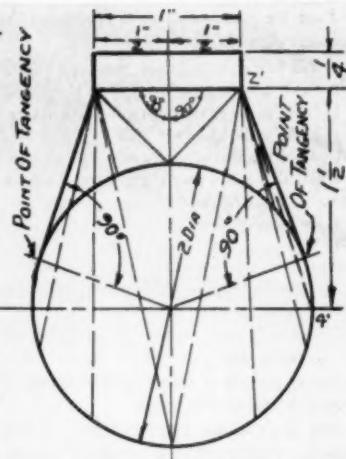


FIG. 2 — END VIEW

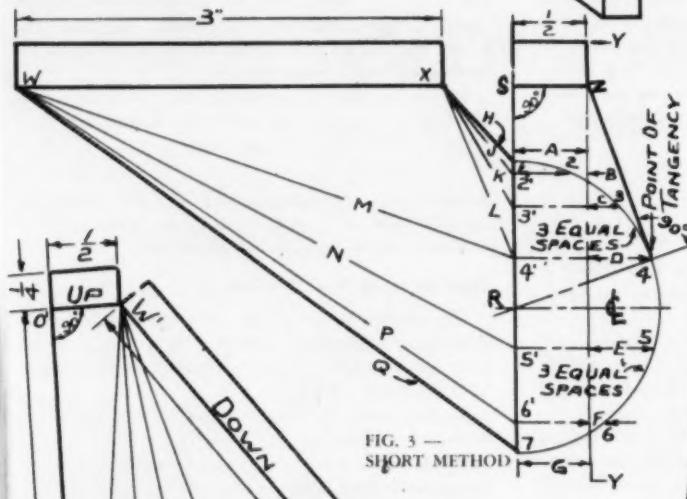


FIG. 3 —  
SHORT METHOD

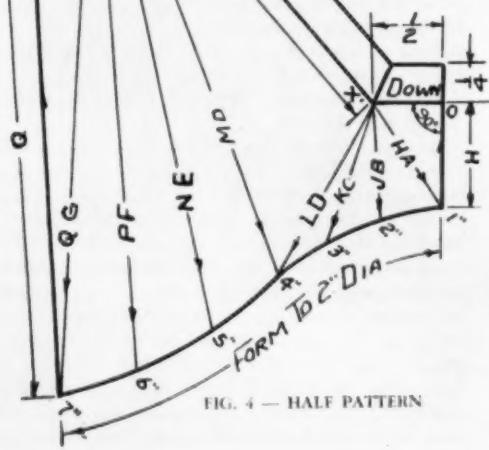
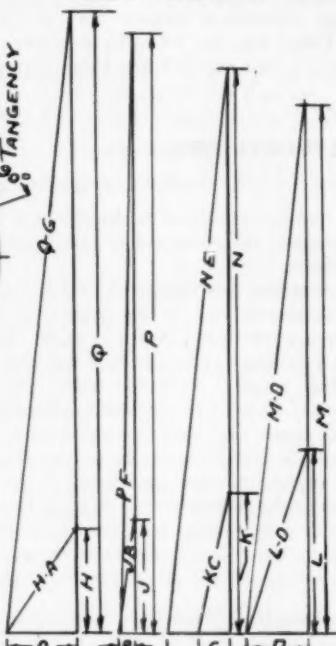
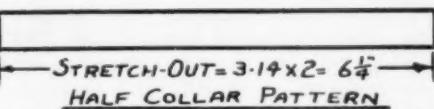


FIG. 4 — HALF PATTERN



TRUE LENGTH LINES



STRETCH-OUT =  $3.14 \times 2 = 6 \frac{1}{4}$

HALF COLLAR PATTERN

THE POINT OF TANGENCY must not be overlooked in this type of pattern problem

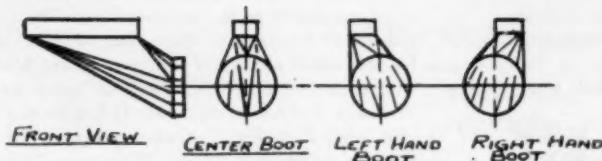


FIG. 5 — THE REVERSE stack boots are here shown in three positions

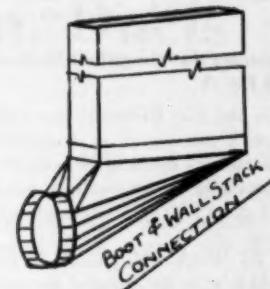


FIG. 6 — THE FITTINGS are used at the end of a round branch duct to make a connection to a rectangular wall stack at a 90 deg angle

## Layout for Stack Boot Fittings

... a simplified method for reverse center stack boots, which are used extensively in forced air and gravity furnace installations

**Hugh B. Reid**  
Instructor, Sheet Metal Pattern Drawing

THE FITTINGS described here are used extensively in forced air and gravity furnace installations, where at the end of a round duct branch it is required to make a connection to a rectangular wall stack at an angle of 90 deg, as illustrated by Fig. 6. The three variations of this type of fitting are known by the trade names *Reverse Center Stack Boot*, *Reverse Right Hand Stack Boot*, and *Reverse Left Hand Stack Boot*. Fig. 5 shows the reverse stack boots in the three positions.

### Figuring Friction Loss

There are two conditions in the application of this fitting which cause friction loss: (a) the change of direction of the air flow which is a 90 deg bend, and (b) a possible difference in area between the round duct and the rectangular duct.

When figuring elbow losses on round ducts, authorities in the heating and ventilating field recommend that a 90 deg elbow with the throat radius equal to the duct diameter is equal to 10 diameters of straight duct. As an example, assume that the round duct is 12 in. in diameter. 12 in. multiplied by 10 would equal 10 ft of straight duct and would be figured as such when computing the static pressure in the system.

The formula for figuring the loss due to a change of area is  $[(v_1 - v_2)/4000]^2$ , which in plain shop language

simply means that if the area at the rectangular end of the fitting is smaller than the area at the round duct end, an increase in velocity would have to take place since the same amount of air is being supplied to both ducts. Assume that, owing to the change in area, the velocity is stepped up from 750 fpm in the round duct to 1000 fpm in the wall stack. Thus,  $v_1 = 1000$  fpm minus  $v_2 = 750$  fpm equals difference 250 fpm. 250 divided by 4000 equals 0.062 and this figure squared, or multiplied by its equal, is 0.0038 in. water gage. This will be the friction loss resulting from the change in area. This figure must be considered when computing the static pressure in the system.

### The Short Method Drawing

A common error made in this type of pattern problem is to overlook the point of tangency and proceed to divide the half circle into six equal spaces, (Fig. 3) project lines through the points to line 1-7 and connect these points by work lines to points W and X on the 3 in. line shown. This will result in a distortion which will vary as the side angle varies. To illustrate this, a dash line has been drawn from point Z' to A' on the end view (Fig. 2). Note that the line is on the inside of the circle, forming a chord, and, therefore, it would not be a true line and could not be accurately developed.

Following is a step by step solution of the pattern problem.

### To Construct the Simplified Method Drawing Marked Fig. 3

- (1) Draw the 3 in. horizontal line marked W-X.
- (2) From X measure  $\frac{5}{8}$  in. horizontally and 1-1/2 in. vertically and establish the point R. Through point R draw a line perpendicular to line W-X.
- (3) With point R as center and radius 1 in., draw a half circle.
- (4) On the vertical line through R, establish the point S which is on the extended horizontal line W-X'.
- (5) From S measure 1/2 in. and mark the point Z. From Z draw a line tangent to the 1 in. half circle, lay a square on the tangent line and draw a line through radius point R to intersect the half circle. The intersection of this line on the half circle will be the point of tangency. Through point Z draw line YY parallel to line I-T.
- (6) On both sides of the point of tangency, divide the respective arcs into three equal spaces and mark the points 1, 2, 3, 4, 5, 6, 7. Through these points draw lines perpendicular to line YY and mark the points 1', 2', 3', 4', 5', 6', 7.
- (7) From point W draw lines to points 4', 5', 6', 7, and mark the lines M, N, P, Q. From point X draw lines to points 4', 3', 2', 1, and mark the lines L, K, J, H.
- (8) Mark the distance from point 1 on the half circle to line YY-A; point 2 to line YY-B; point 3 to line YY-C; point 4 to line YY-D; point 5 to line YY-E; point 6 to line YY-F; and point 7 to line YY-G.

### To Layout the Pattern Marked Fig. 4

- (1) Draw the 3 in. line W'-X'.
- (2) Draw a right angle. Transfer line M from Fig. 3 to the vertical leg and the distance from the half circle to line YY, marked D, (Fig. 3) to the horizontal leg. The hypotenuse of the triangle, marked M-D, is the true length line. With W' on the 3 in. line as center and radius MD, draw a long arc.
- (3) On a right angle, transfer length L from Fig. 3 to the vertical leg and difference D from Fig. 3 to the horizontal leg. The hypotenuse line marked L-D is the developed line. With point X' on the 3 in. line as center and radius LD, draw an arc to intersect the arc drawn from point W'. Mark the intersection point of the arcs 4''.
- (4) Measure length K (Fig. 3) on the vertical leg of a right triangle and distance C (Fig. 3) on the horizontal leg. The hypotenuse line marked K-C is the true length line. With point X' on Fig. 4 as center and radius K-C, draw an arc. Measure distance 4-3 on the Fig. 3 half circle and using this as radius and point 4'' as center, cut the arc drawn from X' and mark the point 3''.
- (5) Transfer length J from Fig. 3 to the vertical leg of a right angle and distance B to the horizontal

leg. The hypotenuse of the triangle is the true length line. With spacing 3-2 on the Fig. 3 half circle as radius and 3'' on Fig. 4 as center, cut the arc J-B and mark the point 2''.

- (6) The length H is transferred from Fig. 4 to the vertical leg of a right angle and distance A (Fig. 3) is transferred to the horizontal leg. The hypotenuse H-A is the true length line. With X' on Fig. 4 as center and radius H-A, draw an arc. With distance 2-1 on Fig. 3 half circle as radius and 2'' on Fig. 4 as center, cut the arc H-A at point 1''.
- (7) With length H on Fig. 3 as radius and point 1'' on Fig. 4 as center, draw an arc. With radius 1/2 in. and center X' cut arc H at 0.
- (8) Transfer length N from Fig. 3 to the vertical leg of a right angle and distance E to the horizontal leg. The hypotenuse line N-E is the true length line. With point W' on Fig. 4 as center and line N-E as radius, draw an arc. Measure distance 4-5 on the half circle (Fig. 3) and with 4'' on Fig. 4 as center, cut the arc N-E and mark the point 5''.
- (9) Length P is transferred from Fig. 3 to the horizontal leg of a triangle and F, which is the distance from line YY to the half circle, is transferred to the horizontal leg. The hypotenuse line marked P-F is the developed line. With point W' on Fig. 4 as center and radius P-F, draw an arc. Measure distance 5-6 on the half circle and with 5'' on Fig. 4 as center, cut the arc drawn from W' and mark the point 6''.
- (10) Line Q is transferred from Fig. 3 to the vertical leg of a right angle and distance G to the horizontal leg. The true length line will be hypotenuse Q-G. With W' as center and radius Q-G, draw an arc. Measure 6-7 on the half circle of Fig. 3 and with 6'' on Fig. 4 as center cut arc Q-G and mark the point 7''.
- (11) Measure line Q on Fig. 3 and from 7'' on Fig. 4 as center draw an arc. With radius 1/2 in. and center W', cut the arc drawn from 7'' and mark the point 0'.
- (12) From point W' draw lines to points 4'', 5'', 6'', 7'', as shown by lines M-D, N-E, P-F, Q-G. Draw lines connecting points 7'', 0', W'.
- (13) From X' draw lines to points 4'', 3'', 2'', 1'', as shown by lines L-D, K-C, J-B, H-A. Draw lines connecting points 1'', 0, X'.
- (14) Draw an arc connecting points 1'', 2'', 3'', 4'', 5'', 6'', 7''.
- (15) From lines 0'-W', W'-X', X'-0, add the 1/4 in. collar. Check all right angles before cutting.

### To Layout the Collar Pattern

Calculate the stretch-out by multiplying the given diameter by the constant 3.14. Thus,  $3.14 \times 2$  in. diameter equals 6.28 or  $6\frac{1}{4}$  in. Draw the rectangle  $6\frac{1}{4}$  in. by  $1\frac{1}{4}$  in.

Add allowances for seams and joints and mark the patterns for fabrication.

# Heating With 4½ In. Ducts

The heating capacity of 4, 4½ and 5 in. round duct was tested by researchers at the University of Minnesota. Their findings will interest any contractor concerned with warm air heating

THE SMALL PIPE perimeter heating system has gained wide acceptance by heating contractors in the past 12 months. Once a technique has proven itself in actual field applications, as this one has, there follows a period when engineers and manufacturers take the basic features and, through a series of experiments and tests, are able to develop higher degrees of performance.

One of the natural problems of heating a residence with small round duct is to be able to replace the heat loss of a large room without having to provide too many individual supply ducts. When the 4 in. round duct was found to be a satisfactory method of delivering warm air to the perimeter of a building with small rooms, it was only natural to think that a larger round duct would be the answer for buildings having large rooms as well as small rooms in the floor plan. The question was to determine how much larger the duct should be. With this thought in mind, capacity tests using 4 in., 4½ in. and 5 in. round pipe were recently conducted at the University of Minnesota.

Each system tested consisted of a starting collar, a run of straight pipe, two elbows, a boot, a register box and a register. During the tests of each of the individual duct sizes, three different types of boots were installed; these boots included an end boot, side boot and a straight boot with an elbow. All boots were installed in combination with the register box.

## How Data Was Obtained

Pressure drop throughout each system was accurately determined by the use of piezometers. Readings were taken across the starting collar, across an elbow with an adjacent straight pipe connection, across an elbow not including the adjacent straight pipe and across the boot, register box and register.

Data was obtained for air deliveries of approximately 50, 75, 100, 125 and 150 cfm with each system tested. Dry bulb and wet bulb temperatures were recorded along with the barometric pressure, plenum static pressure and orifice velocity pressure.

Since the 4½ in. system was neither of standard diameter nor construction, pressure losses in the straight pipe were not available. Therefore, it was considered necessary to conduct a friction loss test on a straight

pipe section. A 40 ft straight section of this duct work consisting of 2 ft lengths with collar type joints was erected and tested. Piezometer rings for determining static pressure drop were installed at four strategic points along the run. Pressure losses were measured at flow rates from approximately 50 cfm to 280 cfm.

All flow rates were calculated in terms of standard air volumes which would produce the same pressure losses as the flow rates encountered during the actual testing. This procedure results in a common ground for comparison with other performance results reported on a standard air basis. The test information for the 4½-in. round straight duct was calculated on a standard air basis.

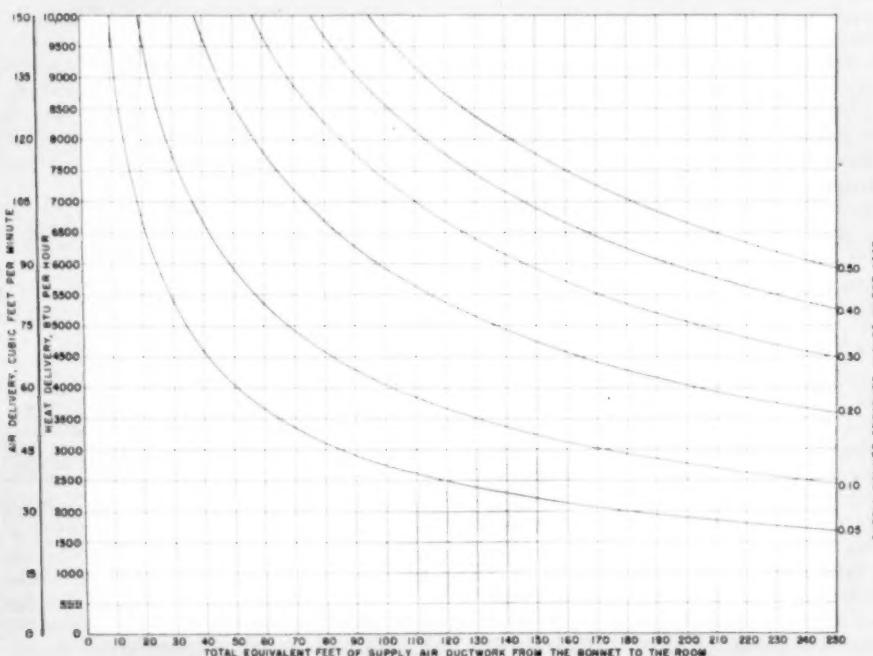
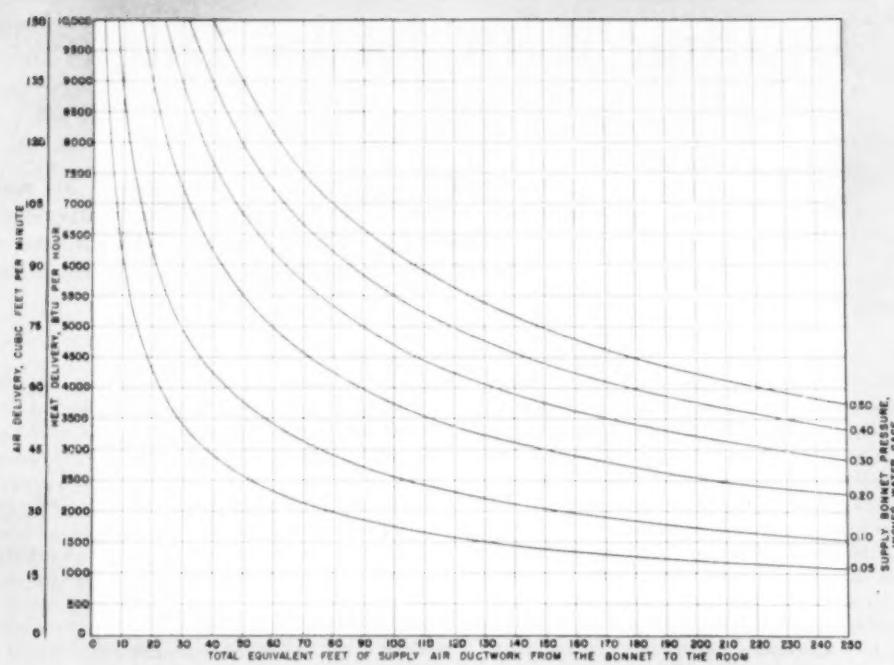
Using the air friction charts in the 1952 Heating, Ventilating and Air Conditioning Guide and the data obtained on the 4½-in. straight duct test, fitting equivalent lengths were determined for the 4-in. and 4½-in. round ducts. This was accomplished by expressing the pressure losses for the various fittings in terms of equivalent feet of straight round duct of the same size as the fitting.

## EQUIVALENT LENGTHS FOR 4½-IN. FITTINGS

Cone type collar	26 ft
Straight type collar	35 ft
Four piece 90 deg elbow	14 ft
Side boot, register box and register	26 ft
Straight boot, elbow, register box and register	45 ft
End boot, register box and register	41 ft

## MULTIPLIERS FOR HEAT DELIVERY AT REGISTERS

Register Temperatures	Multiplier
105 F	.58
115	.73
125	.86
135	1.00
145	1.13
155	1.27
165	1.40
175	1.53



THE GRAPHS FOR 4 in. (above) and 4 1/2 in. (below) round duct systems show the relationship between bonnet pressure, total equivalent length of duct, Btu per hr, and cfm. Curves are based on a register temperature of 135 F and a moisture content of 25 grains per lb of dry air.

These results are reported in the tables for 4-in. and 4½-in. capacities.

The air flow rates through varying lengths of duct are expressed in cfm and Btu per hr delivery.

### Sample Problems Given

#### Problem No. 1

A room has a heat loss of 5600 Btu per hr. The run of duct work to the room includes one cone-type starting collar, 25 ft of round pipe, two 90 deg elbows, a side boot, register box and register. A high sidewall register with 6 ft of 12 in. by 2 in. stack is used. The 4½-in. system is to be used and the register temperature is 135 F.

##### Step 1

In determining the total equivalent length of run, the plenum outlet, straight duct, elbows, boot, register box, register and any other fittings that might be used should all be included.

From table of equivalent lengths for 4½-in. fittings, determine the total equivalent ft of run from the bonnet to the room as follows:

one cone type starting collar .....	26 equivalent ft
25 ft of duct work .....	25 equivalent ft
two 90 deg elbows at 14 ft	
per elbow .....	28 equivalent ft
Side boot, register and	
register box .....	26 equivalent ft
6 ft of stack .....	6 equivalent ft
	111 Total equivalent ft

##### Step 2

On graph for 4½-in. capacities, find the intersection of the 111 equivalent ft line and the 5600 Btu per hr line.

It is found that a supply bonnet pressure of 0.2 in. water gage is needed to satisfy the requirements of the problem.

#### Problem No. 2

It is desired to find the Btu per hr heat delivery of the following system using a 145 deg register temperature: one straight type starting collar, 20 ft of straight duct work, one 90 deg elbow, one side boot, register box and baseboard register. The 4½-in. system is used and the supply bonnet pressure available is 0.2 in. water gage.

##### Step 1

From table of equivalent lengths for 4½-in. fittings determine the total equivalent ft of run from the bonnet to the room as follows:

one straight type starting collar .....	35 equivalent ft
20 ft of straight duct work .....	20 equivalent ft
one 90 deg elbow .....	14 equivalent ft
one side boot, register box and register	26 equivalent ft

95 Total equivalent ft

##### Step 2

On graph for 4½-in. capacities find the intersection of the 95 equivalent ft line and the 0.2 in. water gage supply bonnet pressure line. Read directly to the left, 6080 Btu per hr.

##### Step 3

From table of multipliers for heat delivery at registers we find for 145 F register temperature that a multiplier of 1.13 is to be used. Then, 6080 Btu per hr times 1.13 equals 6870 Btu per hr heat delivery.

The use of small diameter ducts undoubtedly has much

merit, but it likewise entails certain problems. The magnitude of these problems is possibly dependent upon the knowledge of the designer in laying out the heating system and selecting heating equipment. The results indicate that if the fan now incorporated in the conventional type of furnace is used, and the equivalent length of duct is reasonable, the system could be made to operate satisfactorily by limiting the heat load supplied by each register. In many cases this will require the use of additional registers.

It will be noted from the graphs that for constant pressure loss, the heat supplied per register decreases quite rapidly as the diameter of the duct decreases. The 4½-in. diameter systems as shown in this report may find greater acceptance than the smaller diameter systems when related to fan performance.

When considering fan performance, it must be kept in mind that the pressure requirements as reported do not include the return system. In order to keep the pressure loss in the return side to a reasonable value it is recommended that the return duct area be at least 5 sq in. per 1000 Btu per hr. The free area of the return register should also be equal to this value.

On the basis of this recommendation, it is suggested that no single duct of less than 6 in. in diameter or rectangular equivalent be used on the return connections.

The term *supply bonnet pressure* as used in this report is the static pressure available at the supply plenum and not the total pressure available external to the unit as commonly defined.

Graphs and other data used in this article were taken from the booklet *Test of Register and Round Duct Systems*, by A. B. Algren, G. R. Whitnah and J. V. Borry, University of Minnesota, and N. J. Dovolis and C. L. Johnston of the Char-Gale Mfg. Co., Minneapolis.

### \$875 MILLION FOR HEATING MODERNIZATION

BY THE end of 1952, families throughout the nation will have spent over 3½ billion dollars on home repairs and redecorating. Estimates released by the Tile Council of America show that while sums spent on various types of work vary from one section of the country to the other, roughly \$25 of every \$100 will go in modernization or repairing heating equipment. This means that for modernization and repairing heating equipment alone, over \$875,000,000 was spent during 1952. The saturation point has not been reached. By no means has all the modernization work been completed.

The larger part of this potential market can be found in the 23,000,000 homes throughout the nation which are 30 years or more old. This figure represents 54 per cent of the 42,000,000 homes in America, says Tom McDonald, vice president, Minneapolis-Honeywell Regulator Co., in an article appearing in *Coal-Heat*.

This is not a new market; it has been with us for years. But perhaps too many of us have been tied up with day-to-day business to really stop and survey this opportunity for new furnace sales, he said.



"TO SELL, YA GOTTA TELL," C. S. Stackpole told the assembled AGA members and guests. He outlined a five point program which would help sales departments produce better results

## "Roll Up Your Sleeves and Sell"

... was a major theme at the American Gas Association's Atlantic City convention

Specific pointers on how to produce better sales results — an outline of the gas industry's most pressing needs — the importance of building favorable public opinion — all were stressed as factors which would affect future progress

ACCORDING TO C. S. Stackpole, vice president, Eureka-Williams Corp., the first step towards a successful sales program is starting each day off right by instilling in your employees the same enthusiasm you have for a successful day's achievement. He outlined his philosophy of selling in five main points:

1. Hold a sales meeting every morning with all sales personnel before they go out on the road. Rehearse new sales points and get more product knowledge at these meetings in order to be thoroughly prepared.

2. Use demonstrations. Have the finest tools for making demonstrations and don't be afraid to commercialize. Tell customers where to buy products, how much they cost and any points they may wish to know. "Demonstration is one of the finest old-fashioned ways to get business and one of the most important."

3. Coupons and leads should be followed up immediately after arrival in office. A coupon or lead is nothing but a pre-ticket to the home, and a salesman should never leave a coupon house unless he calls on at least five other homes in the neighborhood.

4. More advertising should be done that will be of more use at the local level, in order to influence people right where the people are going to buy. Television offers the opportunity to sell and tell the story almost as if one were right in the customer's presence.

5. Enter into more public and social activities. Contacts and more contacts count.



OVER 170 MEMBERS of the Gas Appliance Manufacturers Association were "telling," with the largest exhibit of gas appliances and equipment ever staged by them. This exhibit was also intended to help AGA members expand their sales by introducing them to new and improved equipment.

"You have to be nice to everybody in business", said Mr. Stackpole as he concluded his address to the members and guests at the convention. He further advised that salesmen should pick out some of the things which they do best, and make use of those mediums.

#### Ruthenburg Outlines Seven Needs

Louis Ruthenburg, Servel Corp., outlined the seven most urgent needs of the industry today. They are:

1. More and better sales manpower.
2. A better pattern of distribution of equipment.
3. Better installation and servicing practices.
4. Improved and more new equipment.
5. More advertising, publicity and promotion.
6. A more effective attack upon the new house market.
7. Greater participation in industry-wide advertising and promotional campaigns.

Mr. Ruthenburg concluded his talk with, "The time to act is now; although practically every economic indicator shows a good deal of strength, the favorable climate for accomplishing our objectives will not continue indefinitely. The national economy has been stimulated by rising billions of defense expenditures. Before long, such expenditures will level off. Later, they will decline. The high rate of capital investment that has supported full employment and rapid economic expansion since the war will not continue without letdown."

The fact that disposable personal income has shown almost no change during the last four quarterly periods is significant. In fact, it is said upon good authority that "per capita disposable income, adjusted to the price level of 1935-39, has been less this year than in 1944, 1945 and 1946."

Such straws in the economic wind strongly suggest

that efforts "devoted to attaining our objectives may be much more effective now than later."

#### Gas Industry Faces Serious Challenge

The convention was called to order by its retiring president, Charles E. Bennett who, in his opening address, pointed out the prospects of the gas heating industry for 1953. Mr. Bennett said, "Today the gas industry in the United States is facing the most serious challenge in its history. I make this statement advisedly and with confidence in the industry's ability to meet it successfully. However, recognition of this situation is imperative. We must realize that a very significant year lies ahead."

"The general condition of the industry at the present time is — excellent. Natural gas sales almost doubled between 1946 and 1951; they could again double, perhaps triple, in the next ten years. Gas will fill an increasing share of the nation's fuel needs. In reviewing the nation's total energy consumption, and if we deduct the mobile uses of fuels — by railroads, planes, trucks and the like — and make a comparison on the stationary, competitive energy requirements of the United States — then natural gas is today supplying well over one-quarter of the total.

"Are we willing to accept the responsibilities that our progress has created? Are we bending every effort to improve our practices? Are we trying to improve our customer service? How are your public relations? If you say, 'Very good', are you reporting from facts recently obtained? Or, is someone down the line just kidding you? Have you made an effort to find out for yourself what the men and women in your community actually think of your product?

"Our industry is doing its utmost to bring better living

(Please turn to bottom of page 60)

# Made in the Sheet Metal Shop

... interconnected stainless steel lockers for use at beaches.  
They're easy and inexpensive to fabricate

**Ernest E. Zideck**  
Sheet Metal Consulting Engineer

STAINLESS STEELS are being put to many uses, many of which are of interest to the sheet metal fabricators in smaller shops. For example, the metal is now being used for inexpensively fabricated lockers designed to hold the belongings of beach-goers. The battery of seven interconnected lockers shown in Fig. 1 represents a design planned for low cost fabrication with only common shears, brakes, drills, hand tools and a spot-and-acetylene welder as equipment.

These lockers are made to order for owners or managers of bathhouses and beach pavilions renting out beach wear and dressing rooms to bathers. They were built small enough so that they do not take up much space in the dressing room area. Yet they provide ample room for hanging up clothes and they keep safe whatever monies or valuables are deposited in them.

## Protection Assured

Stainless steel was chosen for its resistance to salt water corroding effects. The hardness of the metal provided protection against strangers forcing entry by cutting or bending the metal around the locks or at the hinges. Spotwelding of overlapping metal and acetylene welding of meeting metal edges and of corners has eliminated bolts or screws which could be manipulated from the outside of the locked cabinet. Where sheet metal screws were used, as in the fastening of hinges to the door posts, the posts were so formed that the screws could not be handled but from the side of the door itself.

Fig. 2 shows how seven interconnecting lockers were built. More than seven lockers could be so connected, but for practical reasons of handling the structure through the spotweld, the 50 in. length was chosen. 22 gage sheet 10 ft long and 30 in. wide was halved, furnishing two equal blanks, each 5 ft long and 30 in. wide. Seven of these blanks were sheared at one time, and then notched 1 1/16 in. deep at the door post corners and at the opposite sheet side for the connecting flange. Then the blanks were braked longitudinally,

each formed into a square door post, a cabinet side, a cabinet rear wall, and a 1-in. wide connecting flange, as shown in Fig. 2. The common handbrake was used in this forming, with the complicated door post braked for the door ledge first, leaving the long portion of the metal at 150 deg and completing the two corner bends before closing the metal of the ledge to 180 deg. As the stainless sheet has a pronounced springback, all bends were made past the 90 deg angle.

## Spotwelding Extensive

With the seven blanks braked to form, the sections were aligned as shown in Fig. 2, and the flanges were fastened to the wall of the next section, flush with the rear wall, by a number of small diameter sheet metal screws; the connection was spotwelded. Screws were removed after that and the holes were spotwelded with thin weld wire. This completed the structure for receiving seven tops and seven bottoms, formed of blanks with corners and upturned flanges 1 in. wide, fitting inside of the walls of each compartment. The notchout in the door post removed from it the inward turned flange with the door ledge, and the tops and bottoms came to rest in the cutouts. Similarly the notched out connecting flange in the rear wall admitted the tops and bottoms to rest on the edge of the flange. The tops and the bottoms were secured in their position by clamps and spotwelded.

Upon the completion of this operation the door brace strips B-B, shown in Fig. 5, were inserted to fill the rear gap in the door wall and provide a stronger support for the door. The spotwelding of B-B was done with the door posts held at a measured distance to insure the door fitting snugly in between them. After all spotwelding in the cabinet structure was done the assembly was placed with the bottoms held down to a levelly surfaced wood base and all top corners were acetylene welded. Then the structure was turned upside down and the welding was repeated on the bottoms. Welding was done where the door posts contacted the tops and the

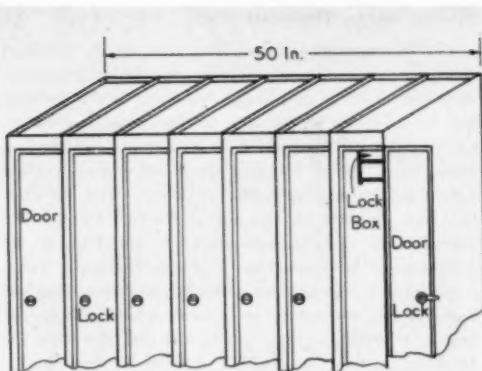


FIG. 1—THIS BATTERY of seven individual lockers is 18 in. deep, 3 ft high. Each locker is 7 in. wide inside. Lock boxes (A) hold money and valuables

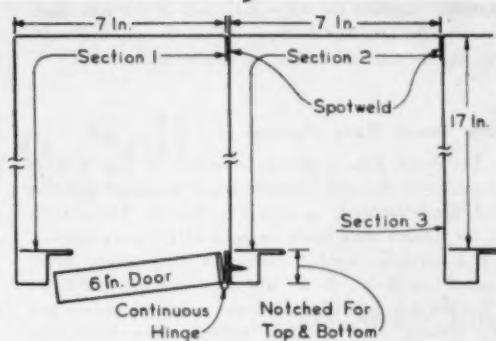


FIG. 2—SHEET 30 IN. WIDE is braced for locker sections

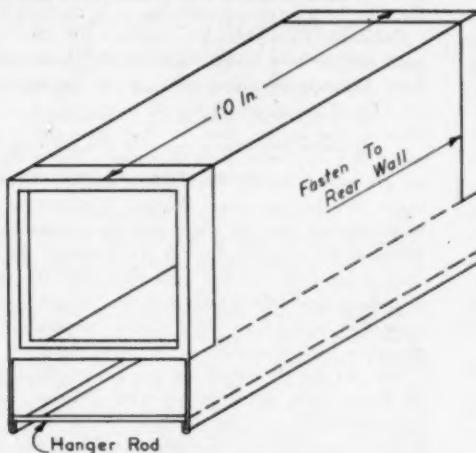


FIG. 3—THE LOCK BOX, at left, is suspended, as shown at right, from the locker top

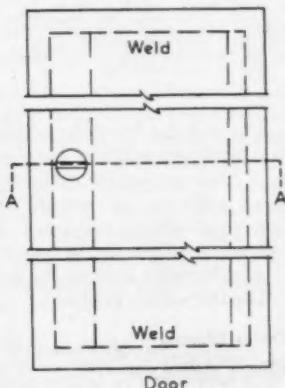
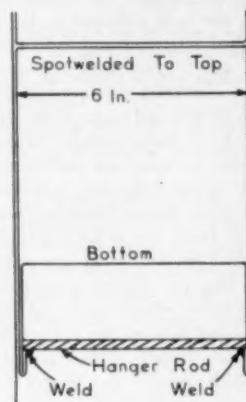


FIG. 4—A LONGITUDINAL BRACE is spotwelded into the doors at A-A

FIG. 5—THE DOORS are formed with triple perimeter flanging and metal doubling

bottoms, frontally on strips B-B, and in the rear junctures of the tops and bottoms. Then the exposed welding was finished off, leaving no marks on the metal.

### How Doors Were Formed

The doors, Fig. 4, shown in section in Fig. 5, were formed with the now common triple perimeter flanging and metal doubling, as shown in Fig. 5. The corners of the flanges were made to meet in a zig-zag fashion, for a stronger welded joint. A longitudinal brace braked as shown in the drawings was spotwelded in. Then the door was clamped down on a level surface and the corners were acetylene welded. The brace was welded to the door flanges at its top and bottom. Doing acetylene welding on the clamped down door kept the door straight and level. A continuous hinge was spotwelded to the door flange, Fig. 5, and a 1-in. diameter hole was cut through the double metals of door and brace for the lock indicated in the picture. This lock is furnished by serial and individual numbers to one customer only. Two keys accompany each lock and the sale of additional keys bearing the lock number is restricted to the original buyer of the lock. The hinge has been drilled and countersunk for small flathead sheet metal screws and the holes are transferred to the respective door post, to which the door is fastened later.

To guard against thieves breaking into the compartment, a special strong box is built, Fig. 3 (A), and its top is spotwelded to the top of the cabinet. The box is cut 10 in. long and the metal forming its top and sides and downward extensions is cut 21 in. Braked to a width passing between the cabinet door posts, the two long sides are braked at their ends to form a half open seam which upholds the hanger rod welded in, as shown in the lower picture (Fig. 3). This rod, 5 1/16 in. in diameter, is placed so that it will cross the compartment in its middle, allowing for common clothes hangers to be hung from it. The box is completed by inserting a bottom between the two sides, spotwelded by flanges to the sides, as shown. Then the frontal strip C is inserted over the metal and spotwelded to it. The rear bottom D is inserted and spotwelded.

### "ROLL UP YOUR SLEEVES —"

*(Continued from Page 57)*

to more and more people and as I have said before, in outlining a program for future progress, our entire industry must be united as a cooperative enterprise. We must coordinate our procedure and act according to careful planning. We must be farsighted and imaginative in dealing with the problems of competition, expansion and economic stress."

### Must Know Public Opinion

To support Mr. Bennett's address, some excellent points were brought out by Caroline Hood, public relations

### Special Locks Provided

The frontal strip C forms door rests on the inside of the box, and a door constructed like the cabinet door, with similar hinge and lock, is made to fit the opening. But before fastening the door to the frontal box flange, the box is acetylene welded in its corners and meeting metal edges, being clamped down on a level surface before the welding operation is done. After the door has been fastened in, the box is inserted through the cabinet door opening and placed to the rear of the compartment for spotwelding to the cabinet top. Again a special lock and keys are provided, so that no one can open the box and extract its contents without the proper key. As shown in Fig. 5, this lock has a strong bar reaching out over the doubled metal of the door flange. The bar closes over the doubled up flange of the door post that extends under it and over the door flange, as indicated in the picture. These locks fasten into the door by a large nut threading over the lock stud.

Ordinarily the lockers are located inside the building near the dressing rooms, and as the floors are wet from adjoining showers and bathers dripping water, the unit of seven compartments is placed on 6 x 6's, allowing the bottom rims to close over the wood to which they are bolted from the inside. Where the lockers are located outside the building near the doors leading to the dressing rooms the unit is placed on a serrated concrete base on which rest the cabinet bottoms, bolted to the concrete through the bottoms. In a few cases a one-piece top has been used over the number of lockers but bathers preferred the "rimmed" top because they could hang their clothes hangers upon the rim while putting clothing in or taking it out.

The surprisingly simple and practical construction of the locker units, being 90 per cent shearing, braking and spotwelding, enables progressive sheet metal shops to fabricate them at a low production cost and supply them to the bath houses and beach pavilions at a price that cannot be met by outsiders. The reasons for this are that the lockers cannot be produced by special machines any more quickly than by common sheet metal working equipment, and labor costs and overhead are higher in factories than in the smaller shops.

counselor, who said that knowledge of public opinion is one of the greatest responsibilities and one of the greatest challenges to those meeting the public every day. The knowledge of public opinion, properly used, is one of the most important tools available to sales representatives. She defined public opinion as the impression given the public by what everyone working for a company does to earn or lose the public's good will.

### New Officers Elected

New officers elected for 1953 are Frank C. Smith, Houston, president; Earl H. Eaker, Boston, first vice-president; F. M. Banks, Los Angeles, second vice-president; and Edward F. Barrett, Mineola, N.Y., treasurer.

*A basic review on*

# How To Sell

**Jay Archer Kiss**

**Sales and Management Consultant**

**A fundamental treatment of salesmanship, its moving forces and how to develop and use them in influencing people to buy is presented here for the heating dealer who wishes to review the techniques and principles of salesmanship, and for use where the training of new salesmen is contemplated**

SELLING IS A PERSUASIVE science which can be diagrammed, studied and utilized by anyone who is willing to consider it as an instrument for influencing human behavior.

The idea that salesmen are born and not made is a convenient alibi for those who would like to have talent thrust upon them, rather than train themselves. Salesmen can be made. Anyone can sell who wants to — or shall I say, who wants to do so seriously enough. In fact, everyone is selling something all the time — and often using very good techniques, too. It is this "I can't sell anything" idea which has destroyed many an otherwise good salesperson.

Our entire social structure is deeply influenced by people selling each other on ideas, and the winner, the better salesman, enjoys life much more than the others. So everyone has some salesmanship within him — to influence others to his way of thinking or even to influence himself in building self confidence, regardless of how bad things may go for him or how difficult the road may become. When you turn that persuasive talent into the moving of merchandise or services commercially, you succeed as a salesman. It is just that simple. However, when a man meets resistance in commercial selling, it stops him more quickly because he is dealing with a total stranger and because the process of commercial selling has many involved facets.

## **Essentials of Salesmanship**

There are thousands of salesmen who have had no formal training. Not all of them are bad — nor good. But this tends to give the illusion that a man who can

talk fluently can sell. Selling is talking, of course — but it is a form of skilled talking that must be handled as carefully as instruments in the hands of a surgeon. For a salesman to be able to influence the thinking of his prospect he must be master of the following elements of good salesmanship:

- Logic . . . Reasoning or appearing to reason
- Order . . . Presenting of thoughts so listener will follow through
- Persuasion . . . A constant, gentle pushing of the listener in the direction of your ultimate close
- Courtesy . . . Courteously explaining away objections, avoiding or dodging unanswerable objections
- Patience . . . Patiently listening when customer talks, repeating when customer does not understand, demonstrating what customer does not know
- Confidence . . . Radiating an air of confidence in self and product, remaining confident in face of competition and in face of customer disinterest
- Authority . . . Surrounding yourself with a sense of authenticity, acting convincing in everything you say, knowing how to say "yes" or "no" with a ringing sense of conviction — and without offense or conceit
- Proof . . . Having available all documentary proof necessary, using this proof without offending the customer, knowing what kind of proof will convince, knowing that the truth alone is not enough, proving your point without condemning competition
- Fluency . . . Being able to speak without hesitancy for words or ideas, to fill the silent gaps with worthwhile words, to talk in a friendly tone without being "smooth"
- Timing . . . Knowing when to introduce each progressive step of selling, when to hit the strongest points — your "aces," when to let the customer talk, when to stop — to close — to ask for the order

## A Philosophy of Fair Exchange

Selling is fundamentally a human relationship — a contact between people in which both benefit, one by securing a profit on a transaction and the other by securing an article of service. Remember that! Both make a profit. The salesperson profits in that he creates a cash benefit for his employer which the seller realizes as salary, bonus or commission. But! The buyer also benefits since he is the owner of an article which will make his life more pleasant, more healthful, more satisfying or even more profitable financially.

Never meet a customer without having that philosophy clearly in mind — both you and the customer will benefit when the sale is made. You are not a beggar. You are not trying to put something over. You are not forcing someone to part with money against his will. But, when you securely adopt the philosophy of fair exchange and mutual benefit, there is a danger that you will concentrate upon the merchandise as your main talking point. Personal selling should concentrate upon the customer because he can see the goods and because you can see him, and chiefly because selling is influencing people, persuading them. Your greatest problem is knowing people rather than merchandise, although you must talk about the goods.

### Components of a Sale

Get a proper sense of proportion of the components of a sale, and give each its fair amount of time and fair proportion of effort.

Your greatest effort, study and thought should be given to the components of a sale which change constantly — the least to those elements which, once you know them, remain fixed. Three of these are variable — they change constantly, actually moment by moment. Be alert to changes, try to check your selling efforts by the immediate changes your conversation creates. There is one component in every sale which is fixed — the merchandise. The variables are: the salesperson; the customer; the surroundings. These are the things the salesman must understand, adjust to, control, and appreciate if a sale is to be made. The most troublesome variable is yourself, the salesperson.

### Self Conditioning for Sales

You, perhaps, seldom think of yourself as an ingredient in selling — as a controllable factor, the way you do, for example, of the accelerator of your car. You have controls on your car. You want to move more rapidly so you depress the accelerator. You want more warmth so you press another knob. You want music, you push a button. When you prepare to make a sale — to meet a customer — you must condition yourself, too. You cannot start your car until you step on the starter. The topflight salesperson shows that every detail of approach is important in preparing for a sale and that you — the salesperson — must be "adjusted" to the selling problem.

You are a variable factor. Your moods change — your attitudes are seldom the same. Many things influence



YOU ARE READY TO SELL when you know your product and have control of yourself, the customer and the surroundings

your efforts — your enthusiasm — yes, even your logic. In fact, the customer himself can influence you and so change your thinking. In many cases the customer sells the salesperson on the idea that he does not need or want the article. If the salesperson "buys" the idea, then the customer does not buy the article.

### People Like to Resist Before Buying

Selling is a continuous process of thinking — a sort of battle of wits which moves back and forth as each party gets a new idea or presents a new objection. All this "sparring" must be done without the slightest animosity, or all is lost. The customer does not give you resistance or refusals because he does not want to buy. Remember that! It is simply human nature not to buy too easily. The customer actually wants you to sell him, but he wants to feel the thrill of putting up resistance.

I met a Mexican merchant carrying a load of pots on his back on his way to market. I offered to buy the load and he refused. Pressed for an explanation he said, "I'm on my way to market. If I sell my wares to you, I'll have no reason to go to market and I'll miss all the fun of bartering." So, when you meet resistance, label it for what it really is, and learn to enjoy it.

### You Can't Sell Without These

HEALTH — A full day of selling is as strenuous as a couple of football games. You must constantly be "in training." Enough restful sleep is important to your thinking. You make errors in judgment when you are tired. Learn how much sleep you need to awaken refreshed.

Don't talk over your home problems with fellow employees. Don't talk shop during your lunch period or rest period. Don't gulp your food or depend upon pie ala mode as a lunch. If time permits, take a short walk at noon. Find some pleasant person to walk and talk

with. Walk slowly. Read some relaxing book or magazine at rest periods or just lie down. You can grasp moments of relaxation even by shutting your eyes in an elevator. Think of your work as a challenge — every day new problems — and you their master.

Have friends who respect you and your objectives. Avoid critics. Occasionally isolate yourself in a room at home for even ten minutes. Let go. Think of nothing. Think of yourself floating on a cloud. Be patient and you'll relax. Your fatigue will slip away.

Selling is a tough job that depends upon detailed sensitivity to people and you must be in good health, alert, enthusiastic.

**ATTITUDE** — Your attitude is controllable! You can think, believe and act according to any pre-planned idea. You do not have to love all your customers but you must like people, and when they are in your presence, your attitude must be one of gracious acceptance.

You must learn to look upon selling objectively. What you think personally is of little consequence. A doctor, for example, need not love you in order to cure you. He may, in fact, hate you; but you'll never know it if he is a good doctor.

If you will notice, the most successful people in selling are always cheerful — always full of vim — always optimistic. Is it easy? No. It isn't easier for them than for you. But it can be done.

Then see what happens to you — personally — the extra reward for doing a good selling job. You've learned to shelve your cares when you want to. That saves you a lot of grief in your personal life. Why, that trait alone could give you more pleasure than the money earned by selling.

Take a personal interest in the customer. Make some remark about his good appearance if it can be done discreetly. Say something about the good weather. Smile. That is, smile because you feel like smiling. Exert yourself. Want to be pleasant.

When you speak, develop a feeling of pushing yourself outside yourself. When a mother says to a sick child, "Darling, please try to sleep," there is that self projection in the voice — a deep wanting. When you get that in your voice you have established a priceless quality of getting close to people. They'll believe you — respond to you — like you.

**TEMPERAMENT** — Selling requires perpetual good nature. Be that way naturally if you can, if not, then put up a front. Think of yourself as an actor — selling is showmanship. Many a fine actor has gone on with the show with his heart breaking over some personal tragedy. If that kind of acting is too strenuous for you, you don't belong in selling. Get it out of your head that you are simply a seeing-eye dog to show customers around. Merchandise alone may be resistible but when you add your own confidence, courtesy and understanding — you can make even a ten cent item virtually irresistible. That's work, my friend, don't you underrate it.

Never lose your temper. Refuse to let anyone disturb your poise. Think of anger as a weapon in someone

else's hands.

When you learn to face an angry person with a smile, you win friends and you gain poise. Let this same strategic technique follow you home. Don't argue with anyone. You are not licked if you refuse to argue. You'll save your strength — live longer.

**EDUCATION** — Salesmanship is not necessarily restricted to the highly educated. Except for the intricate items such as are sold to engineers or manufacturers, the average person can successfully sell, because it is more important to know people than to know things. You can improve your selling ability by remaining a constant student — of inventions, world affairs, local activities, current events, psychology, and, of course, people. Always keep studying people — not critically, just objectively. Discover the customers' rate of understanding and talk to them at the speed they are talking — with the language they are using — on the subject they prefer. Better read that sentence again.

The best education you can get for selling purposes is to study your merchandise carefully — learn to like it, regardless of price — and learn about people wherever you see them.

**LOGIC** — Learn to be logical — to think without bias — to reason without personal motivation. Mathematics provides a fine mental gymnasium for logical exercise. You must be logical to sell for logic provides you with the techniques for surrounding your customer with inescapable reasoning. It also helps you straighten out the confused thinking of your customers.

You think logically when you approach a problem without preformed opinions or prejudices. When you sell, think as your customer thinks. Try to put yourself in his place. If you were buying what would convince you? Watch the customer to see what your words do to him. How does he reason? How does he think? You are not selling yourself — you are selling him. So help him to accept your logic by thinking as a buyer, then as a seller, then back as a buyer again. Meanwhile, the customer, being on one side all the time, is not aware of your strategy and slowly swings over to your ideas.

Learn to think fundamentally, objectively, to look at the question from both sides. Then you will be able to convince your customer of the logic of your representation.

**PATIENCE** — Patience is a virtue in any walk of life, but particularly in the field of salesmanship. Here all your logic, all your reasonableness, all your persuasion are lost, if you lose patience.

It is no credit to a salesperson to be patient with a customer who responds quickly. Life-long customers are not always those who find your store convenient, your prices right and your merchandise reliable. People will go out of their way, endure many hardships in order to bring their trade where patience is practiced. Remember that the customer who annoys you, is unreasonable and rude is acting under some provocation. Few people are normally hard to get along with — try not to be one of them.

# Finding and Applying Overhead

N. J. Biddle

Secretary, Michigan Heating & Sheet Metal Association

**The contractor bidding a job must make sure he has accurately estimated what that job will cost him. One of his most important cost items is overhead. If he uses the proper methods in finding and applying overhead, he will be insuring himself against loss.**

EVERYONE KNOWS what overhead is, after a fashion. Many contractors talk rather glibly about their overhead and the method of application, but too few contractors engaged in any phase of construction work have as intimate and detailed a knowledge of just what constitutes overhead, and how to find and apply it, as is desirable.

This is principally because overhead is not readily apparent. It has an intangible nature which is confusing. There is much divergence of opinion regarding a number of items of cost in contracting. Are they overhead or are they job cost?

How can one determine in which category each of these items belongs? There are several other controversial items which some contractors claim should not be charged in the business operation at all. Some claim that only tax deductible items should be included in the schedule of business expenses. It is my belief that any item which can be translated into dollar value should be properly charged for, even if it is not tax deductible. This will be enlarged upon, later. For the present and until otherwise indicated, I shall concentrate on the overall or general overhead of contracting firms. There will be many who will disagree with the statements and conclusions reached herein. The purpose here is to get contractors to delve into these matters, to understand them, whether or not they agree with this presentation.

## Overhead Defined

The meaning of overhead probably will be seen more clearly if two definitions are given: *dollar overhead* is the sum of all of those individual items of cost involved in the business of contracting which cannot be identified as specific amounts of money in connection with individual jobs; *overhead percentage* is the relationship or ratio of the dollar overhead to sales.

To be completely understood, overhead must be compared with other factors of job costs, all of which must

be taken into consideration by the contractor when he establishes the bid-price for a job. The three principal divisions of job cost are:

1. *Material* — includes all material and all material charges such as freight, cartage, handling, etc., where such charges can be definitely identified with specific jobs.

2. *Labor* — includes all labor and all labor charges or costs directly occasioned in the employment of labor which can be definitely identified either as a direct payroll percentage or a definite amount of money.

3. *Overhead* — includes the proportionate share of the sum of all items which cannot be identified with individual jobs as definite amounts of money.

The problem confronting the contractor in the bidding of future work is how to find and properly apply overhead in compiling a bid price.

## The Sale Is the Base

To find overhead in dollars, all that is necessary is to keep a record of every expenditure chargeable to overhead, and to periodically sum it up. That alone, however, is not sufficient for bidding purposes. Overhead must be found as a relationship or percentage to some other item or base from which to calculate. Regardless of any other method of determining and applying overhead, in business arithmetic, *the sale is the base*. We are concerned with finding what percentage overhead is to sales so as to be able to translate it into dollars of job cost. This matter can best be illustrated by example.

For a given period, you add all of the miscellaneous items of cost which cannot be properly charged directly to jobs, such as rent, heat, light, stationery, telephone, and all the rest of such items. This, then, is your dollar overhead. The other factor required is sales for the same period.

Assuming that a certain firm's sales were \$83,378.10 and the sum of the many items of overhead was \$16,475.62, to find overhead, divide overhead items by sales. This equals 20 or 20 per cent.

Only one more item is now required to establish a selling price where the direct job cost (material, labor and any other direct job charges) has been determined, and that is the percentage of profit desired. For purposes of an example, it is assumed that 10 per cent, which is a normal profit rate, is desired.

### Example:

The selling price is the base or .....	100%
Overhead as established above .....	20%
Profit desired .....	10%
Total overhead and profit .....	30%
Leaving for direct job cost .....	70%



# We Can Supply Our Growing Fuel Needs

**Future U.S. fuel demands are likely to call for double the present annual output. Discussed here is how we can meet this demand by enlarging our effective fuel resources, and getting greater use from them by improved engineering and transporting methods**

POINTING OUT THAT FULL production calls for vast consumption of fuels in all forms, the report of the President's Materials Policy Commission states that "the United States can produce enough energy for all its needs without substantially increasing costs, and by 1975, have a supply of fuels and electricity roughly twice that of 1950."

## Fuel Demands Greatly Increased

While the total demand roughly doubles, the demand for liquid fuels may more than double, and the electricity demand rise three to four-fold. Thus the trend toward greater needs will place a decided drain upon the Nation's basic fuel resources. The remaining reserves of gas and oil that are known to exist in the United States are inadequate to meet the demands of the next 25 years. Although we will certainly discover more sources of supply in the years ahead, the costs of discovery and extraction seem likely to rise as we are forced to drill deeper and possibly to rely on new pools of smaller average size. We will not suddenly "run out" of these highly important fuels, but we could well enter a long period of rising costs.

## The Shifting Pattern in Fuel Reserves

The only really abundant reserves, which are in coal, are enough, theoretically, to last for centuries, but expanding their use presents a cost problem. Present economic and technical conditions would make it costly to make a drastic shift toward coal, away from gas and oil. In fact, over the last 50 years the movement has been in the other direction. Coal has lost heavily to other fuels, and the percentage it contributes to the Nation's total has declined markedly.

At the century's turn, coal supplied more than nine-tenths of the Nation's total needs, while petroleum and natural gas together provided less than one-tenth. By 1950, coal supplied only two-fifths, whereas gas and oil provided the other three-fifths.

In the shifting pattern, however, sooner or later the Nation will once again have to rely upon the vast coal reserves.

Meantime, the Nation's fuel position can be strengthened by (a) enlarging effective domestic fuel resources, (b) getting greater use from these resources, and (c) importing more fuels from abroad.

## Liquid Fuel Reserves Still Great

For years some people have been predicting that the Nation's crude oil supply was going to be exhausted within 10 to 20 years. Yet discoveries and output have continued to rise. In 1951, two barrels of oil were found for every one extracted, and two cubic feet of gas were found for every one extracted. Proved recoverable reserves in 1951 were estimated at 27.5 billion barrels (excluding 4.7 billion barrels of natural gas liquids) against only 8.5 billion in 1925. Within the last five years our demand for crude petroleum has begun to outstrip domestic production, and, for the first time, the United States has become a leading importer.

This recent development suggests that the United States, faced with an approximate doubling of oil demand by 1975, will find it economical to turn increasingly to foreign supplies, and eventually to liquid fuel from shale and coal.

Large synthetic oil production from shale is a welcomed possibility. Experimental tests on shale deposits near Rifle, Colo., have shown a yield of 30 gallons per ton. These deposits are believed to cover an area large enough to provide at least 80 billion barrels of liquid fuels.

Other deposits analyzed to date, in spite of lower yields and higher costs, could produce an estimated additional 420 billion barrels.

## Natural Gas Resources Dwindling

Characterizing natural gas as a "boom fuel", the Commission's report declares use of natural gas by 1975 could readily rise  $2\frac{1}{2}$  to 3 times as high as in 1950, even at somewhat higher prices, if the supply were available. While proved reserves now are about 26 times the net amount extracted in 1950, and discoveries still are rising at about twice the current rate of production, the resources of natural gas are being consumed at a mounting rate and probably before the century is out, if not sooner, supplies of natural gas will decline.

The big problem of coal is how to put the vast reserves to greater use at lower costs. Reserves of coal and lower quality solid fuels are more than 90 per cent of the Nation's total mineral fuel reserves and about 40 per cent of the world's total coal reserves.

## New Coal Mining Methods Offer Solution

Further gains in productivity must be in underground coal mining. Much can be accomplished by fuller mechanization of existing mines. There are further gains in low-cost mechanical cleaning and preparation of coal. Cheaper ways of transporting coal also could benefit the industry enormously. Devices now in the experimental stage, such as long-distance conveyor belts and pipelines to carry a "slurry" of powdered coal, deserve vigorous attention.

In the field of electric energy the problem is how to increase the Nation's supply two and a half times during the next 25 years, without running into considerably higher costs per unit.

There is enough waterpower and fuel together to produce the electricity we need. The question is, what will it cost? So far, the trends of real costs and real prices for electricity have been downward. From 1925 to 1950, the average price of electricity to residential consumers, corrected for changes in the purchasing power of the dollar, fell 70 per cent. Prices paid by industrial consumers likewise declined sharply.

### Distribution of Fuel Sources

Today, the pattern of sources comprises—besides the 26 per cent from hydropower—11 per cent of electricity derived from oil, 14 per cent from natural gas, and 49 per cent from coal. All of these sources are subject to pressures which could force their real costs upward. The United States, with about one-tenth of the free world's total population, in 1950, consumed more than one-half of total free world energy supplies, derived largely from domestic sources. The nations of Western and Southern Europe, with approximately one-fifth of the population, used about one-fourth of the energy supply.

The attack upon these problems will require international cooperation based on our country's recognition of its stake in the economic strength and security of the rest of the free world, and of the vital role that energy plays in modern economics and military preparedness.

### Rural Contractor Installs Large Size Plants

THE HUBERTZ HEATING and Roofing Co. is located in Corry, Pa., which has a population of 8,000—but this doesn't limit the size of job that it will undertake.

The Hubertz Company has worked on churches, small factories, movie houses and schools, installing sheet metal roofs and providing warm air heating systems wherever they can be used.

Ninety per cent of the heating work done by Hubertz consists of revamping existing heating installations, and replacing old systems with new.

One of the important jobs which the Hubertz Company was called upon to do recently was the installation of two suspended oil-fired furnaces in the storage room and garage of Pennsylvania's largest potato grower. The Ivan Miller Farms, said to be the fourth largest producer of white potatoes in the United States, has a main storage building 160 x 168 ft where the temperature must be

maintained at 45 F—the best for storage. The adjoining sorting room, in which the workers sort and grade potatoes, must necessarily be kept at a higher temperature for the comfort of the workers. Consequently, zoned heating is necessary in this building. One suspended unit heats the two rooms.

The garage and repair room is kept at 40 F, merely to keep trucks in operating condition and to provide a heat curtain which curtails heat losses from the storage and sorting rooms. The suspended furnace in the garage has no ductwork. It hangs from the 20 ft ceiling and, as the big 10 x 14 ft doors are opened to permit trucks to enter or leave, the heater goes on, blanketing the cold air with a layer of heat.

In the sorting room the thermostat is set at 50 F to 55 F. The ductwork is located above the ceiling which is insulated with aluminum insulation.

The two furnaces used less than a thousand gallons of fuel oil last winter, about half of what was anticipated.

Hubertz also roofed the big sorting and garage building at the potato growers farm. Roofing the 160 x 168 ft building wasn't the biggest job he had ever done, but it was one of the most unusual. The roof is practically dead flat so that water is channeled from slightly elevated drains. In cold weather when there is a possibility of the drains becoming blocked with ice formations, the drains are kept open with manually operated electric heating elements installed in each drain.

*Contributed by Alice Holton, Perfection Stove Co.*

### Extended Plenums for Gravity Systems

IN 1947 THE MECHANICAL ENGINEERING Department of the University of Illinois began a study on the use of extended plenums for gravity warm air heating systems in residential applications. During the first series of tests, the full basement height of 8 ft was used to obtain the greatest motive head available. In a second series of tests the furnace was raised to simulate a basement height of 7 ft. The results of the various tests were compared. It was found that there were less air changes per hour with the furnace simulated for a 7 ft ceiling and a higher bonnet temperature was inherent with the decrease in motive head; however, it was still well below the design temperature of 200 F for gravity furnaces.

Other tests based around a comparison between intermittent and continuously fired heat sources with the conventional round pipe used in gravity type systems and the extended plenum systems proved that the extended plenum systems performed satisfactorily from the standpoint of distribution of warm air from individual registers and essentially the same as round pipe systems.

The tests proved that the best time to balance a gravity system provided with an intermittently fired heat source is on a day which requires from 30 to 50 per cent of the rated heat input. This procedure will reduce any unbalance that may occur on mild spring and fall days and at the same time provide good balance conditions on cold days.

# We Should Sell More Metal Roofs

... a major speaker told the National Association of Sheet Metal Distributors at its 42nd annual meeting

**SHEET METAL MEN** should try individually, and as a group, to advance the use of metal roofs, Ray P. Farrington, Potts-Farrington Co., told sheet metal distributors at their recent 42nd annual meeting in Atlantic City. He said an advertisement appearing some years ago in national magazines, and stating that over 90 per cent of American residences are roofed with asphalt shingles, should be a challenge to the sheet metal industry. He pointed out that before a protective duty had been placed on imported tinplate, metal had been very popular as roofing material. However, as the years passed, use of metal roofs steadily declined.

The advantages of a metal roof, which could be made plain to the home owner as far outweighing increased cost, are its reduction of fire hazards and protection against lightning. Mr. Farrington pointed out that a 12 year tabulation for the city of St. Paul showed that about 30 per cent of all fires in houses with wood shingle roofs were caused by sparks igniting the roofs. This could not happen with metal. Also, he pointed out that a metal roof is easily grounded for protection against lightning.

It might be pointed out to home owners that some savings in labor and materials can be effected, since it is not necessary with a metal roof to have a complete wood deck, as is required for asphalt shingles, nor, perhaps, even as much decking as is used with wood shingles. Since the price for the metal is about double that of asphalt shingles, he feels it is important to bring about savings wherever possible.

## What The Home Owner Wants

Mr. Farrington, using his own preferences as an example, pointed out that the best type of roof for the home owner's needs is a metal one that is made the equivalent of one piece by welding, soldering or locking. With this type, expansion and contraction must, of course, be allowed for.

The home owner wants metal which will take and hold paint, since, at present at least, he will not wish to live in a house "under a bright metallic sheen . . . although it would help to keep the house much cooler in summer and warmer in winter, and would produce economies in the amount of electricity and cooling

water needed to operate an air conditioning system in the summer." In his opinion, the roofs should be made to look like shingle, slate or weathered shingle, since that is the appearance architects seem to approve. However, he felt that later on, when metal roofs gain more acceptance, such camouflage will not be necessary. He feels roofs should be colored in light pastel which would not absorb much heat from the sun's rays — an important consideration.

## What Metals Should Be Used?

As to the metal these roofs should be made of, Mr. Farrington said, "Some time in the near future it may be aluminum alodized to take and hold paint." However, he pointed out that while aluminum might ultimately come down in the price of strips and sheets to a level that would permit wide use for residential roofing, it is not yet in that range. In his opinion, steel should, therefore, be considered most strongly, since it is cheaper.

He cautioned, however, that steel must have good corrosion resistance. It must, he feels, have a scientific coating that will protect the base steel without requiring periodic paintings.

Such a material, he feels, is "right around the corner." He believes it can be fitted in to the continuous strip steel mill, continuous pickling galvanizing, and that this product, which can be spot welded, soldered, double seamed and which will take shallow forming without flaking the coating, will take and hold paint without requiring any chemical treatment.

## Roof Tailored to Job in Shop

He said the metal could be made in very long lengths, about 500 ft. to cut down waste. This would mean a shipping problem, since the metal cannot be coiled on account of the formations to produce the desired shadow lines. However, he felt this problem was not insoluble.

After the roof was measured, or blueprints examined, the sheet metal man could shear the metal to length and tailor it to the job in his shop. On the job site, certain operations would be performed by portable tools, some of which (such as spot welders) are now available, and others of which might be designed.

He predicted two men could apply this roof in not

too many hours, and spray paint it with the desired color in less than a day.

Advances in metal roofing would, he pointed out, "be a great boon to the sheet metal shop. There would be a vast market in re-roofing older houses and the sheet metal shop would get more business in the new residence field."

### What Goes Up Doesn't Have to Come Down

We can appraise the future of American business "from a relatively solid platform rather than balancing on the edge of an abyss," Robert R. Williams, Jr., vice president of the Girard Trust-Corn Exchange Bank, Philadelphia, told the association in a major address. When you say, "What goes up must come down," in reference to business, he pointed out, you are making a false analogy between business and physics. He emphasized that business was not likely to come down to a real depression, since we have adjusted soundly to high production and price levels.

Mr. Williams pointed to the fundamental conditions which account for our present state. First, there has been tremendous demand — consumer demand accumulated during the war, demand reflecting continued growth and development of our country, the huge demands for rearmament for self defense, etc.

Second, there has been an expanded money supply, created by bank financing of the government debt during the war. Unlike the situation after World War I, neither the assets nor the deposit money will be self-liquidating this time, as the cost of war was met by sales of long term bonds. Our economy has been catching up with this increased money supply, but we have not been able to expand production fast enough to absorb all the money which people have been willing to pay out — and therefore, have had rising prices.

However, he said, we have not this time "allowed our inflationary expectations to run wild to the point of general speculation." In fact, he feels we had reached a point of balance between production, prices and money supply when the Korean conflict began. Now, there is confidence that our productive system will, short of full scale war, be able to meet both civilian and defense needs, and this is a stabilizing influence on our present economy.

Another factor in our present state is the re-established flexibility of our money system through the re-established independence of the Federal Reserve. This, plus the lack of speculation, gives us our relatively solid platform from which to view the future.

### What Are the Prospects?

He pointed out the four main factors influencing business prospects. First, defense spending is a weak prop in the long view, since it can be expected to rise for a while and then level off after about six months.

Second, the Government fiscal program will probably call for heavy spending and not so heavy taxing until next spring. But at that point, the force will reverse

itself, and we can expect a temporary depressing influence about the second quarter of 1953, to be followed by more stimulus as spending continues.

Third, capital expansion will probably level off and then decline.

Fourth, residential building may slip off by the middle of 1953. However, it has remained high because of the shifting of population, the lifting of the lower income level averages and an easing of buying terms.

In summary, he stated that we have good business broadly based in the country. We can count on continued support from defense spending, but there will be changing pressures reflecting the tax program. The plant and equipment expansion and modernization may run out and residential housing should be viewed with a careful eye. It adds up to active business at firm prices with a testing period around the middle of 1953.

### Selling Emphasized

Mark J. Lacy, president, Peck, Stow and Wilcox Co., told the gathering that the most important part of getting an order is to know just when to hand the prospect the pencil with which to sign the order. All the other work, before and after, is only preparation to and for this. He pointed out that selling isn't easy, that to succeed requires "plenty of genuine 'umph' — a lot more than is common among men."

He stated that "if you don't have more and better selling work carried out, then your bound-to-increase overhead expenses can be charged only to your present volume. And whenever that becomes unsupportable, then new ways or methods of getting products from factory to user will be found."

### Flat Rolled Products May Ease Next Year

W. V. Packard, an editor for *Iron Age*, spoke to the meeting on the outlook for flat rolled products. He said that steel is now in the midst of the greatest expansion in the history of the country, and that the industry has developed a program which, by the end of 1953, should mean production of about 123 million net tons. Thus, in the space of about four or five years, the industry will have added 25 million net tons. However, it has been reported that the steel demand by 1975 will be about 150 million net tons. That means there will only be about 25 million net tons of expansion left for the twenty years of that period. Mr. Packard feels that a lot of older steel plants may, therefore, be abandoned or scrapped.

He reports the expansion in light metals — aluminum, magnesium, etc. — will be even greater, perhaps five-fold.

He pointed out that before the recent steel strike, flat rolled items, especially, and cold rolled sheets and strip and some grades of tinplate were becoming easy to get. However, he feels that making up the lost tonnage will mean no hope for easing of flat rolled steel in or until after the beginning of 1953, and it will not be easy to get until the second quarter.

(Please turn to bottom of page 72)

# YOUR BUSINESS AND THE LAW



## How Binding Are Sales Promises?

Albert W. Gray

If a salesman makes fraudulent claims for heating or air conditioning equipment, is the dealer or contractor legally liable? Also, is the contractor responsible if equipment does not measure up to the warranty, implied by law, that equipment properly fulfill the purpose for which it is intended? Where the dealer or contractor stands in such cases depends on the specific wording of the sales or installation contract.

A HOUSE OWNER contracted for the installation of four air conditioning units together with the necessary equipment. Before the contract was signed, however, the contractor wrote the owner, "We are pleased to submit this proposal covering an air conditioning system in your house," which was followed by a detailed description of the equipment he suggested for installation.

In this letter was enclosed a pamphlet published by the equipment manufacturer with other advertising material relating to this air conditioning system, all fastened with a clip in a cover on which was printed, "Air Conditioning Proposal."

This advertising proclaimed of this equipment, "Comfort and luxury," "Quiet in the performance of its duty,"

"Without odor," "No more dirt and soot." The letter however contained no reference to these enclosures.

### Contract Alone is Binding

The installation contract made by this owner contained the provision, "There is no agreement, verbal or otherwise, which is not set down herein," which was supplemented by the guarantee of the manufacturer that the equipment and all parts of it were free from defects in material and workmanship under normal use and service but limiting the obligation of the manufacturer under the guarantee to replacing any defective parts within one year from the date of installation.

When later the owner refused to pay a long overdue balance on this contract the dealer sued. In the defense to this lawsuit the owner contended that the equipment was inadequate and had failed to function as this advertising literature had represented, that these representations were a part of her contract and were obligations which the contractor had assumed.

The judgment in the lower court in favor of the dealer for this unpaid balance was affirmed by the state's Supreme Court with the statement, "The provision in the contract that, 'There is no agreement, verbal or otherwise, which is not set down herein,' effectively excludes from consideration any such undertakings which are not set in the contract or incorporated therein by reference."

The court adopted in this instance as authorities for its determination decisions by the supreme courts of two other states.

In one of these cases a sales contract had contained the clause, "No agent of this company had authority to make any reference, representation or agreement not contained in this contract, and none not contained herein shall be binding upon the seller, or in anywise affect the validity of this contract or form any part thereof, but all statements made have been merged and set forth herein."

### Not Liable for Verbal "Sales Puffing"

A salesman for the seller had here apparently included in his sales talk every promise and inducement his imagination could suggest. The buyer's defense was that these representations had been false and that the agreement was fraudulent and void.

The court said of the consequences of the salesman's flight of fancy, "This seems a hard case. But contracts freely made by intelligent persons cannot be abrogated simply because they are unwise. The representations plainly were fraudulent in their nature and would invalidate any agreement made in reliance upon them. But the parties chose, after the preliminary statements

Albert W. Gray, author of this article, has had many years experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of "The Family Legal Adviser".

and negotiations, to put the contract in writing.

"It is not contended that the buyer was induced to sign that contract through any misrepresentation as to its contents or meaning. On the contrary before signing it he read it through and understood its terms. One of those terms to which he himself assented was that no agent of the seller had any authority to make any representations not contained in the contract. Further stipulations to which he likewise assented were in substance that every representation to which he would undertake to hold the seller was written in the contract and every statement upon which he relied was set out in it. He made it freely when he knew what it was about.

"It is a fundamental principle of law that contracts in writing, voluntarily executed with full knowledge of their contents, by rational vendees acting on their own judgment, must be enforced."

#### Clause Outlaws Collateral Promises

The other decision which the first court followed as an authority in the determination of this air conditioning controversy involved a contract containing the clause, "This agreement constitutes the full understanding between us and verbal understandings of your agent, other than the conditions set forth herein, do not form a part of it."

This contract too, with its clause outlawing collateral promises and undertakings, had been executed as a consequence of an over-sanguine confidence of the buyer in the unselfish interest of an unscrupulous salesman in the welfare of a customer.

The defense to the suit brought for the amount agreed to be paid under this agreement was that the contract had been signed in reliance upon the salesman's promises and that since these obligations had not been fulfilled by the seller the contract had been broken and the buyer relieved from the performance of any obligations.

This contention was disposed of by the court with the laconic comment, "The law conclusively presumes that parties to a contract understand its obligations."

#### Dealer Held to Implied Warranty

A greater and more subtle hazard than this too effectual sales puffing by overzealous salesmen is the warranty implied by law that goods be fit for the purpose for which they are intended by the buyer.

It was an ancient rule of the law in the sale of goods that the buyer must look out for himself, that is, every sale was a Yankee horse trade and, "De'il take the hindmost." That bit of our jurisprudence has substantially disappeared, replaced to a large extent with the requirement of fairness and cooperation by both buyer and seller.

A dealer today who is consulted by a buyer in the purchase of air conditioning equipment or any other goods is held by the law to an implied warranty that the goods he sells are fit for the purpose for which the purchaser intends them. One court said of this ancient rule that characterized every sale as a horse trade:

"That rule was rigidly enforced for many years but as it was found at times to promote injustice, its severity was to some extent gradually but cautiously relaxed. In the course of time this harsh application of the rule was overturned. The doctrine of implied warranty thus first made its inroad upon the rule of, 'Let the buyer beware,' owing not to what the parties said but to the nature of the transaction.

"Thus under certain circumstances there is now an implied warranty of quality. When from the nature of the transaction or the relative situation or circumstances of the parties, the legal duty should reasonably be imputed to the seller, in the interest of commerce and to enable the purchaser to get what he paid for, the law generally will impute one, although progress in that direction has been slow and cautious in view of that ancient rule."

#### Contract Can Void Implied Warranty

A contract for the sale of refrigeration machinery in one midwestern state contained the provision, "This document contains the entire proposed agreement between the parties hereto. It is understood that there are no agreements, promises or understandings other than those incorporated in this proposal in printed or written form," and the further provision, "We guarantee first class material and workmanship for one year from the date the equipment is first put in operation. In the event that material furnished by us shall prove to have been defective at the time it was furnished, natural wear and tear, misuse and accident excepted, we agree to repair or furnish a duplicate of any such part free on board cars at factory within such period.

"No liability shall attach to us, however, for damages or delays caused by defects, beyond the making of such repairs or furnishing duplicate parts, nor shall we be liable for any defective material repaired or replaced without our consent."

In the lawsuit brought on this contract to recover the unpaid balance of the price the purchaser set up as a defense that since he had disclosed to the seller the purpose for which this equipment was intended, there was an implied warranty of its fitness on the part of the manufacturer, which had not been fulfilled.

The manufacturer in turn interposed this disclaimer of collateral or implied warranties or agreements, contained in the contract itself.

"By the great weight of authority, as it appears to us," said the court, "where the contract itself contains a disclaimer of any warranties other than those specifically set forth in the writing or a statement that the writing contains the entire contract between the parties, oral warranties based on representations made during the negotiations may not in the absence of fraud, be admitted, and even implied warranties are excluded."

#### Express Warranty Rules

Unfortunately the courts of this country are not uniform in the rules they have laid down governing the

application of warranties implied by law in sales contracts that equipment be fit for the purpose intended. A dealer to be as certain as possible that such implied warranties are excluded in a sale or installation contract, should frankly and clearly so state in the agreement with the purchaser.

Two incidents illustrate the importance of doing this. The sale contract of a lighting plant in a southern state had a stipulation in relation to warranties, "The company guarantees that the turbines and generator connected therewith, will run continuously at the normally rated capacity without undue heat, undue noise or vibration."

The court held of the defense of the purchaser that the equipment was unfit for the purpose for which it was bought. "Even more decisive on the facts in this case is the doctrine that an express warranty in a written agreement excludes an implied warranty concerning the same subject matter. A guarantee set forth in the contract is a denial of a guarantee by implication.

"Where the parties have expressly agreed upon a warranty the law must, in the absence of fraud or mistake, conclusively presume that they included in their express agreement whatever of warranty is to prevail between them respecting the matter to which it refers. An express warranty of quality, for example, must therefore exclude an implied warranty of quality."

Several years later this principle of law was involved in a similar case before a state court. There a guarantee of refrigeration equipment sold in that state had simply been, "We guarantee this equipment to be satisfactory in every way when operated in accordance with instructions. If for any reason it should be unsatisfactory, return it to us and we will refund all you have paid."

A fire occurred and the purchaser contended it originated from defects in this equipment and brought a lawsuit against the seller, claiming that the damages

from the fire were the consequence of a breach of an implied warranty of the fitness of the equipment.

#### **Warranty Designed to Protect Buyer**

While the court in its decision acknowledged the law to be as laid down in the earlier decision of the Federal Court it suggested that any disclaimer of a warranty in such contracts should be set out in the agreement, as was contained in the contract for air conditioning units in a previously mentioned action, which stated that, "There is no agreement, verbal or otherwise, which is not set down herein," including for greater assurance the words "express or implied."

"The general rule in this state," said the court, "is that where there is an express warranty there can be no implied warranty except as to title. But there is authority from other jurisdictions limiting this rule to cases where the warranty implied is inconsistent with that expressly made. In some cases it has been broadly held that an express warranty in a contract to sell or a sale, necessarily excludes any implied warranty.

"If express warranties in a contract are in their nature inconsistent with the warranties that would have been implied had none been expressed, it would be indeed violating the intention of the parties to imply warranties, and express warranties which relate to the same matter as those which the law would otherwise imply may be deemed inconsistent, but the principle should extend no farther.

"An express warranty is generally exacted for the protection of the buyer, not to limit the liability of the seller. The fact that a seller expressly warrants the machine to be made of the best steel ought not to exclude an implied warranty that it is properly manufactured and will do the work such machines are designed to do, if such warranties would otherwise be implied."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

## **MORE METAL ROOFS —**

*(Continued from page 69)*

### **Increasing Distributors' Business Volume**

W. J. Busser, Jr., Busser Supply Co., tried to answer the question, "What steps can be taken to increase the dealer purchase of heating units from the distributor?" He told the sheet metal distributors that there are a number of reasons why dealers might prefer buying direct from the manufacturer. Among these are the fact that the average wholesaler does not stock a full line of heating equipment and often cannot deliver immediately, and that many wholesalers' salesmen are not trained in the handling of equipment — are afraid to make recommendations. Also, in many cases the wholesaler has given the salesmen not only heating and sheet metal to sell, but also a complete line of hardware or industrial supplies — making it impossible for the salesman to know enough about any one line.

He felt that by correcting these conditions, wholesalers could increase their business volume. The jobber should maintain a complete stock at all times. He should insist that salesmen take advantage of such schools as the National Warm Air Heating Conferences so that they will know more about the installation and servicing of equipment. The jobber should know enough to be able to provide service, assistance and engineering help to his dealers. He should also offer merchandising plans to aid the dealer. Most important, he should show the dealer that he can have more profit left at the end of the year by dealing with a distributor.

New officers for the sheet metal association were elected at the meeting. They are: president, Alexander Thomson, Tanner & Co.; vice presidents, William H. Bowe, Jr., Herrick & Co., Roger K. Becker, Ohio Valley Hardware & Roofing Co., and Lee J. Haines, E.E. Southern Iron Co.; executive committee (three year term), A. G. Earnshaw, Earnshaw Sheet Metal & Supply Co., and P. M. McKenney, Conklin Tin Plate & Metal Co.

# ANOTHER CASE OF *Copper* WHERE IT COUNTS



WEATHER WILL BE KEPT on the outside where it belongs at Liberty Gardens. For the Revere 16 oz. Copper Flashing shown in photo at top left will seal it out. In the valleys and other spots, too, rain and snow will be foiled by enduring Revere Copper. Even temperature ranges of, from 40° below zero to the high nineties hold no terrors for this metal.

THE ECONOMY OF REVERE COPPER is borne out by the fact that it is the first choice of many architects and builders even for their low rent public housing projects. So while first cost may in some cases be higher, in the long run it pays to specify Revere Copper. Sheet metal contractors like it because it is so readily worked and soldered.

Arch.—Kinne & Pennock, Utica, N. Y. Assoc. Arch.—Robert Trowell, Rome, N. Y. Gen. Con.—Peter Reiss Const. Co., Brooklyn, N. Y. Sheet Metal Cont.—Republic Sheet Metal Works Inc., Utica, N. Y.

When Government regulations curtailed the use of sheet copper a while back, some architects and builders in sheer desperation were forced to use other materials. Quite a few told us that they did not consider these materials substitutes; for to their minds there are some places in building construction where there simply is no substitute material that combines *all* the advantages of copper.

Take flashing for example. In a 180-apartment project such as Liberty Gardens, it's mighty important that flashings be non-rusting, enduring, easy to install and require little if any maintenance. Revere filled the bill with 13,000 lbs. of sheet copper for flashing valleys, canopies, ventilators, windows and doors and miscellaneous applications.

In addition to the Revere Sheet Copper there was also 16,000 ft. of Revere Copper Water Tube used for hot and cold water service and supply piping in sizes ranging from 4" to 1/2".

Now, with restrictions eased, and quantities permissible without allotments greatly increased, there isn't any reason why your next job can't have the many lasting benefits of Revere Copper. See the Revere distributor nearest you about Revere Sheet, Strip or Roll Copper for flashing. Particularly ask him about the money-saving advantages of Revere Keystone Thru-Wall Flashing. And, if you have technical problems, he will put you in touch with Revere's Technical Advisory Service.

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SIE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



#### **Rochester Association Learns About Collections**

THE NOVEMBER meeting of the Master Sheet Metal Furnace and Roofers Association (Rochester area) was held at Lorenzo's. E. C. Reichart spoke on collections. Mr. Reichart, office manager for the Wm. J. Schmitt Co., and a director of the Credit Men's Service Corp., was well qualified by his experience to tell members how to handle this problem.

Members have been urged to try to "get out" others who had been conspicuous by their absence from meetings. A slip with the name of one such member was attached to each of the bulletins sent out before the meeting. The member receiving a slip was urged to call on the recalcitrant member personally or to phone him to make arrangements for picking him up for the meeting and taking him home.

#### **Detroit Group Meets**

MEMBERS of the Detroit Warm Air Heating Association heard a talk by Jerry Clark, of Chrysler Airtemp, at a regular meeting held on November 13 in the Cass Room of the Fort Shelby Hotel. A short board of directors meeting preceded the regular get-together. Dinner was served before the meeting to those wishing it.

Like many other groups, the Detroit Association has launched a membership drive, and, in pre-meeting bulletins, has stressed the importance of bringing membership prospects to the meetings.

#### **Carolinas Roofing Association Holds Convention**

THE CAROLINAS ROOFING and Sheet Metal Association held its mid-winter convention on December 4, at the Barringer Hotel, Charlotte, N. C. This was a business meeting and was limited to members of the association. Further details will be given in a subsequent issue.

The November meeting of the Raleigh Roofing and Sheet Metal Contractors was held on Monday, November 3, and featured a barbecue dinner. It was held in the warehouse of the McAllister Supply Co., Raleigh. Speaker of the evening was Gordon Waters. The group discussed contributing to the North Carolina Engineering Foundation, which is a project of the Carolinas Association.

At the Carolinas Association board of directors September meeting, held at Sea Island, Ga., a discussion was held on the future sites for the summer conventions. The large attendance at these meetings makes selection of sites difficult. President Joe H. Piper made the following committee appointments: June convention committee,

Horace King, chairman, Bill Fort, and Rudy Barnes; membership committee, W. H. Arthur, Jr.; convention site committee, John Southall; advisory committee, W. H. Arthur, Jr., Hilton Bowles, Earl DeLay, Gordon Waters; warm air committee, Bob Foster.

President Piper has announced the appointment of Rhett Hartin, Jr., to a council of the Sheet Metal Contractors' National Association, whose purpose it is to act in an advisory capacity to the board of directors on questions of widespread importance. The council will be available for comment, consultation, criticism, or recommendations to any or all committees. The council is to be the means of building, enlarging and activating the program to build a coordinated industry.

#### **Rockford Association Works on Warm Air Heating Code, Licensing**

RECOMMENDATIONS for a warm air heating code and a licensing ordinance for warm air heating contractors in the city of Rockford, Ill., together with a proposed apprentice training program, were discussed at length during a recent meeting of the Sheet Metal and Furnace Contractors' Association of Rockford.

President Edward Godlewski outlined the work which has been done and which remains to be done on the code. Copies of a suggested code and ordinance, which have been prepared by the Sheet Metal Contractors' National Association, were passed around to members.

George Chioldini described the current government program for aiding Korean veterans, and told how such a plan would work in Rockford. After a discussion, the members went on record as being in favor of a program set up along the lines described.

#### **Michigan Bulletin Contains Selling Hints**

A RECENT BULLETIN sent to members of the Michigan Heating and Sheet Metal Association offers a number of selling hints for contractors. The first essential is listed as proper background of performance. Each firm, it is stated, must know the practical end of the business, including technical requirements, how to design adequate installations, etc., to insure customer satisfaction. Another factor is prompt service on equipment—keeping faith with the customer by starting a job on schedule, etc. Third, it is suggested that the contractor point out to the prospect the difference between first cost and eventual cost—that a cheap, inadequate job now may cost more in the long run. This is the point to

make when the contractor of a reliable firm is confronted with low price competition. Contractors are urged to figure their costs plus profit carefully, to quote that price, and never to "shave off" any of the price, since this will result in loss, and will also leave a bad impression on the customer.

#### **Georgia Group To Hold Winter Meeting**

THE WINTER business meeting of the Roofing and Sheet Metal Contractors Association of Georgia will be held during January, at which time election for the offices of president, vice president, and secretary and treasurer is scheduled. K. F. Dunlap, now past president, has been appointed chairman of the nominating committee. Elections also will be held for five directors, each for two year terms, from the following districts: Atlanta, Albany, Valdosta, Columbus and Augusta. The by-laws of the association provide for election of directors by nominations from members of each district. Members to have elections have been urged to hold their caucus promptly and select their nominee, so that his name may be presented at the proper time.

#### **Erie to be Host of State Convention**

AT THE October meeting of the Sheet Metal and Roofing Contractors' Association of Erie, the convention committee reported that the group was to be host to the state Sheet Metal Association on June 18 to 20, 1953.

#### **Canadian Warm Air Group Convenes**

THE 1952 ANNUAL convention of the Canadian chapter, National Warm Air Heating and Air Conditioning Association, was held in the Chateau Frontenac Hotel, Quebec City, on December 4. Details of this meeting will be included in a forthcoming issue.

The association is streamlining its Indoor Comfort Schools for 1953. This year, it introduced the "Vu-Graph" daylight projector and public address equipment. Next year the various sections of the course will be more adequately illustrated on slides. Also, newer design methods will be dealt with and the basic design information will be demonstrated thoroughly.

In planning the 1953 course of study it has been decided that a thorough coverage of heat loss calculations will require the first day, gravity design method and basic winter air conditioning design will be completed the second day, and on the third day the class will design a perimeter system using extended plenum duct for a standard structure and will hear a lecture on perimeter installation in basementless structures. There will be thorough coverage of small pipe system design. The fourth day will be devoted to a discussion of conversion of gravity systems to winter air conditioning, to controls and continuous air circulation. The fifth day will be used to complete a problem plan of a small school.

Classes are to be held in London, Ont., Jan. 5 to 9; Toronto, Jan 12 to 16; Vancouver, Jan. 26 to 30; Edmonton, Alberta, Feb. 2 to 6; Regina, Sask., Feb. 9 to 13; Winnipeg, Feb. 16 to 20; Kitchener, Ont., Mar. 2 to 6;

#### **Coming Events**

Jan. 18-21 — New York State Sheet Metal, Roofing & Air Conditioning Contractors Association, Annual Convention. Statler Hotel, Buffalo. Clarence J. Meyer, Executive Secretary, 567-69 Genesee St., Buffalo 4.

Jan. 26-28 — National Roofing Contractors Association, 66th Annual Convention. Bellevue-Stratford Hotel, Philadelphia.

Jan. 26-29 — American Society of Heating and Ventilating Engineers, 59th Annual Meeting. Conrad Hilton Hotel, Chicago. A. V. Hutchinson, Secretary, 62 Worth St., New York 13.

Jan. 26-30 — 11th International Heating & Ventilating Exposition (The Air Conditioning Exposition). International Amphitheatre, Chicago. Charles F. Roth, Manager, International Exposition Co., Inc., Grand Central Palace, New York 17.

Jan. 28-30 — National Heating Wholesalers Association, Inc., Annual Meeting. Congress Hotel, Chicago. Stuart Rambo, Executive Secretary, 637 Union Commerce Building, Cleveland 14.

Feb. 5-6 — Sheet Metal and Warm Air Heating Contractors' Association of Indiana, 35th Annual Convention. Hotel Severin, Indianapolis. Frank E. Anderson, Executive Secretary, 439 S. 17th St., Terre Haute.

Feb. 9-11 — Sheet Metal Contractors' Association of Wisconsin, Inc., Annual Convention. Schroeder Hotel, Milwaukee. I. F. Kanitz, Executive Secretary, 225 E. Michigan St., Milwaukee 2.

Feb. 23-25 — Ohio Sheet Metal Contractors' Association, Annual Convention. Mayflower Hotel, Akron.

May 4-6 — Sheet Metal Contractors' National Association, Annual Convention. Jung Hotel, New Orleans. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

Amherst, N.S., Mar. 16 to 20; Quebec, Mar. 23 to 27; Ottawa, Apr. 6 to 10; Montreal, Apr. 13 to 17; and Hamilton, Ont., Apr. 27 to May 1.

#### **Cook County Meeting Well-Attended**

THE REGULAR monthly meeting of the Sheet Metal Contractors' Association of Cook County, held October 15 at the Builders Club, was one of the best attended meetings this year. The general discussion centered around the welfare fund. Then, L. H. Sohn and his son, Ted, of L. H. Sohn Co., presented a new sample estimating sheet to the group. There followed a discussion period on

(Please Turn to Page 106)

# A Deluxe Unit... for your customers who

## *the gas fired MOHAWK* **WINTER AIR CONDITIONER** *by AMERICAN-Standard*

In the field of warm air heating equipment, the Mohawk winter air conditioner is tops. It's a quality product through and through.

Made of cast iron for extra durability, longer life and quieter operation, the Mohawk is available in eight sizes with capacities ranging from 80,000 to 300,000 Btu input per hour. High temperature alloy ribbon burner burns natural, manu-

factured, mixed, liquefied petroleum and LP-air gas uniformly and sparingly.

The handsome jacket is a real eye-catcher on your sales floor and enhances any basement setting. For detailed information on this deluxe unit and other gas fired winter air conditioners in the American-Standard line, contact your wholesale distributor.



**right for small, medium and large homes**

In every community there are always many home owners who will buy nothing less than the best! And you can sell them all! For the Mohawk is available in sizes and models for any home, whether large or small. Selling modernization jobs to this type of buyer is a big market in itself. The picture shows such a job made in a large Pennsylvania home by Bell Plumbing & Heating Co.



**and for multiple installations**

You'll also find it comparatively easy to sell your share of multiple installations such as the apartment house job shown at the left. This particular installation involved the sale of five Mohawk winter air conditioners in a 25-room apartment building in Omaha, Nebraska, by Gordon Furnace and Sheet Metal Works. Every community offers numerous opportunities for jobs similar to this.

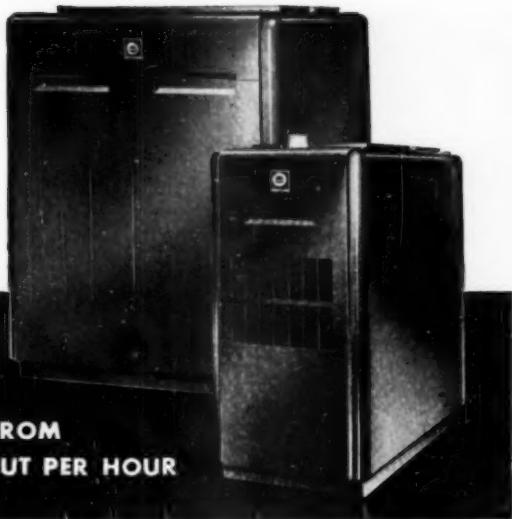
# want the best!

AVAILABLE IN

8 SIZES

WITH CAPACITIES RANGING FROM

80,000 TO 300,000 BTU INPUT PER HOUR



Precision Engineered for Completely Automatic, Dependable Operation!

1. jacket — smooth Forge Red hammer finish—rounded corners—rigid slip joint construction—high temperature aluminum finish inside—inner liner reduces heat loss.
2. heating element—cast iron resists action of burned gases—surface ground joints sealed with asbestos wick gasket — leakproof — baffled to heat entire surface uniformly.
3. cleanout—easy to inspect and clean flue passages.
4. controls—finest quality for completely automatic operation — automatic pilot valve for each element—100% shut-off for LP-gas and LP-air gas.
5. burner—cast iron body—patented high temperature alloy corrugated ribbons—quiet and efficient.
6. blower — quiet double inlet type — rubber mounted. Self-aligning bearings—easily adjusted for continuous air circulation.
7. motor—rubber mounted—overload protected—adjustable pulley—will not cause radio or television interference.
8. radiation shield—at sides and between each heating element — provides extra heating surface — minimizes heat loss.
9. filters—clean the air effectively—easily and inexpensively replaced.
10. draft hood—built in—conserves space—regulates normal draft—protects against down draft.
11. pre-heated air—return air is drawn over hot flue surfaces—saves fuel—increases efficiency.



American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

## AMERICAN-STANDARD HEATING



*Serving home and industry*

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON



# THE NEW IDEA

## For SMALL PIPE and PERIMETER HEATING

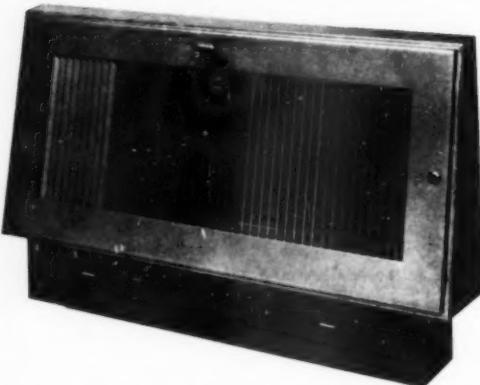
### No. 132 1/4 U.S. BASE DIFFUSER REGISTER

For 4"-4 1/2"-5" Small Pipe Forced Air Systems

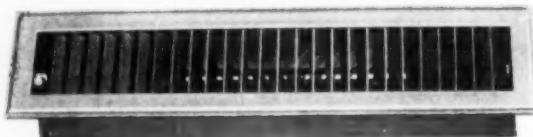
The Best Low Cost Small Pipe Register for Small Pipe Systems. The No. 132 1/4 U.S. base register is superior to, and eliminates, metal "Mop Boards". It sits outside of and against the wall. Requires no cutting of walls, stud-  
ding-plates, carpets, or rugs. Complete with heads or without heads. It is the Ideal Jobber's Line for Base Setting and Sidewall Small Pipe Systems.



Showing Lateral Spread of No. 132 1/4-No. 410



This laboratory smoke-test photo shows its amazing Lateral Spread of air distribution. It BLANKETS Windows and Wall Surfaces. Its Vertical Air-Throw is at an angle to AVOID SOILING Walls, Drapes, and Curtains, and which angle of deflection agrees with Figure 7, Page 6, Small-Pipe No. 10 Manual (issued by National Warm Air).



### No. 410 U.S. Diffuser Floor Register

For ALL Types of Perimeter and Small Pipe Systems

Made in Seven Sizes — with Graduated, Adjustable Diffusing Vanes. Perfect valve operation — with balancing set-screw. Blanks windows and walls and (where required) has lever-operated valve to prevent soiling walls, drapes, and curtains.

Place your request now for 1953 catalogue. Watch for January announcement.



Showing "Away from Wall Air Throw" of No. 132 1/4



UNITED STATES REGISTER COMPANY

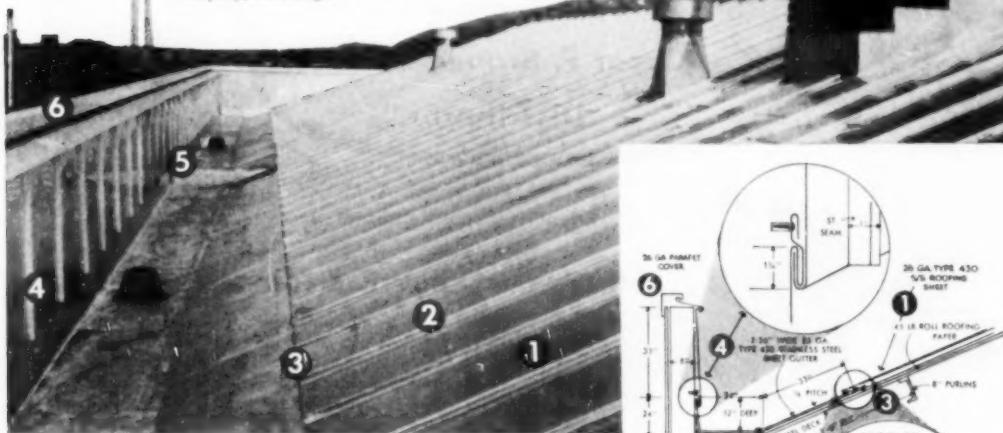
BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

SOLD BY LEADING JOBBERS FROM COAST TO COAST

# Another long-life, low-cost, light-weight roof of U·S·S 17 (Type 430) STAINLESS STEEL

**STRAIGHT-CHROMIUM** Stainless Steel was used for the roof of the new office structure of The Heppenstall Company, Pittsburgh, Pa. The panels were brake formed and erected by Limbach Company, Pittsburgh.



**U·S·S 17 (Type 430) STAINLESS STEEL** is today's big news in the field of industrial construction. Recent months have seen a steadily increasing use of this long-lasting, maintenance-free, light-weight material that offers an unbeatably low cost-per-year.

A typical example is the new office structure of The Heppenstall Company in Pittsburgh, Pa. Two existing buildings and the space between were enclosed to form a new structure 86' x 100' and straight-chromium Stainless Steel was used for the roof, the flashing, the walls and the parapet.

For any building that must go up to stay up, U·S·S 17 Stainless Steel is one of the most economical materials available today for walls and roofs. It will give you a service life several times that of less durable materials . . . free from recurring maintenance charges . . . free from painting. The corrosion resistance of this straight-chromium grade of Stainless has been proved in installations more than a quarter of a century old.

Strong, corrosion-resistant Stainless Steel can be used in lighter gages than other materials. Wall and roof panels can be installed quickly and easily.

Wall and roof panels of U·S·S 17 Stainless Steel offer an outstanding opportunity today for fabricators. This straight-chromium grade of Stainless is available without CMP tickets for all types of construction. A share of this business is waiting for you. As the first step, mail the coupon for our booklet and indicate if you would like one of our representatives to call.

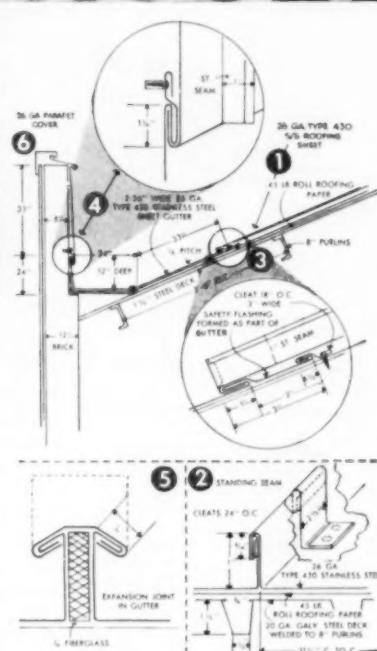
UNITED STATES STEEL COMPANY, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND  
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH  
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.  
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## U·S·S STAINLESS STEEL

2-1967

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

UNITED STATES STEEL



**DETAILS** on gutter, standing seam, ridge and lap of the U·S·S 17 Stainless Steel roof of The Heppenstall Company's building. Numbers correspond with those on the photograph above.



United States Steel Company  
Room 2807G, 525 William Penn Place  
Pittsburgh 30, Pa.

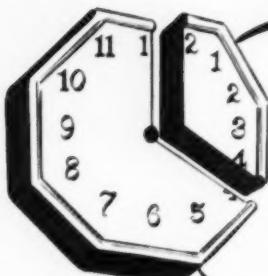
Please send me your booklet, "U·S·S 12, U·S·S 17 Stainless Steel Walls and Roofs for Industrial Buildings."

Please have your representative call.

Name . . . . . Title . . . . .

Address . . . . .

City . . . . . State . . . . .



**"I learned how to sell  
Viking '2300' Humidifiers  
by the clock from  
Oscar P. Brauer, St. Louis  
Distributor."**

Says Lowell A. McCord  
Friendly Viking Representative



**and here's what MISSOURI  
Dealers say about Viking humidifiers**



"When I go out on service calls on other jobs in any season, it's easy to sell humidifiers as a profit-boosting tie-in. I've handled other humidifiers, but I like Viking because it's trouble-free, dependable . . . gives solid customer satisfaction, and satisfied buyers are permanent customers."

**D. W. LASATER,**  
Lasater Heating,  
911 64th St., University City 5, Mo.



"I sell Viking humidifiers to my dealers by pointing to the clock and asking how long does it take to install a humidifier—how much time on callbacks and adjustments, how much time getting the right humidifier for the type furnace? Adds up to a lot of time, doesn't it? But with Viking, 20 minutes to install and that's all. My dealers get the point and I save selling time."

**OSCAR P. BRAUER,**  
A. G. Brauer Supply Co.,  
2100 Washington Ave., St. Louis 3, Mo.



"Know how counts in this business—that's why I prefer Viking. Since one type and size fits all furnaces, my men can always install a Viking. This adds up to a lot of time-saving experience—each Viking installed makes the next one easier and faster. They don't have to stop and learn about a special humidifier on every installation job."

**KENNETH WERLEY,**  
T-W Heating & Sheet Metal Co.,  
6166 Marconford,  
St. Louis County, Mo.

"The 2300's all in one box, ready for me to take to the job. All I have to do is cut one square hole in the plenum and drive 6 screws. After that the pan assembly just slides in; I don't see how it could be any easier. And with all the service and adjustment instructions on the access plate, my customers don't take my time or money on callbacks."

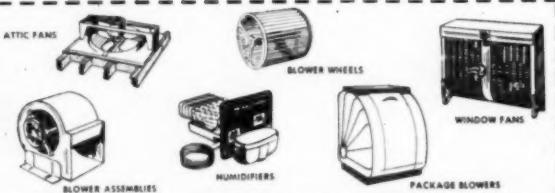
**WILLIAM E. KNIFE,**  
W. E. Knipe Heating & Sheet Metal Co.,  
8566-70 Charles Rock Road,  
Overland 14, Missouri.



"I say install Viking and forget about it as far as service calls are concerned. The puncture-proof, Foamglas float, the hard chromed valve, and all the premium quality materials give steady, lasting performance. All you have to look out for is the annual replacement of the plates. That gives me a chance to solicit other repair and maintenance work."

**H. F. STOVERINK,**  
County Heating & Sheet Metal Co.,  
7009 Olive Blvd., University City, Mo.

**Viking**  
AIR CONDITIONING CORP.  
Cleveland 2, Ohio





## ARMSTRONG

helps you haul 'em in

You make money when you sell Armstrong furnaces.

The Armstrong dealer franchise is a profit-package . . . built to help the dealer . . . to help you make sales . . . to help you make profit.

It's centered around a line of furnaces you can be proud to sell. A full, wide line of them. Oil, gas and coal. A model to fit the needs of every prospect.

Priced so you can sell against competition without shaving your profit. Made to install easily, quickly, so you don't lose your profit on installation troubles. Built to operate de-

pendably, so service calls don't eat up profit.

But Armstrong goes farther than that. National advertising to open up the minds of your prospects. Folders, direct-mail, newspaper ads and special campaigns to help you pull them to you. Store display materials to help close them.

And a big inventory, close at hand, at your command.

If you want volume at a profit, check on the Armstrong profit-package. Your nearby Armstrong wholesaler has facts and figures for you. Get in touch with him now, or drop us a line for his name.

Make sales, but make a profit.

See our exhibit at the 11th International Heating and Ventilating Exposition, Chicago, Jan. 26-30 — Booths 1301 and 1302. Please address Dept. AA at our plant nearest you.



Armstrong's two huge plants serve both sides of the continent quickly, economically. A warehousing distributor, with a complete Armstrong inventory, is within a stone's throw of everywhere. Wherever you are, Armstrong's distribution system is set up to serve you. It's better, quicker, more profitable . . . for you.

**ARMSTRONG**  
FURNACE COMPANY

COLUMBUS,  
OHIO



DES MOINES,  
IOWA

Warm-Air Furnaces—Gas, Oil, Coal—A Complete Line



These are the reasons  
why **METALBESTOS**  
is the **best** gas vent

1

#### FAST, EASY INSTALLATION

Sturdy, die-formed couplers slip together readily without forcing. No cement, mastic or banding material needed. Adjustable lengths and elbows eliminate costly cutting and fitting; speed installation.

2

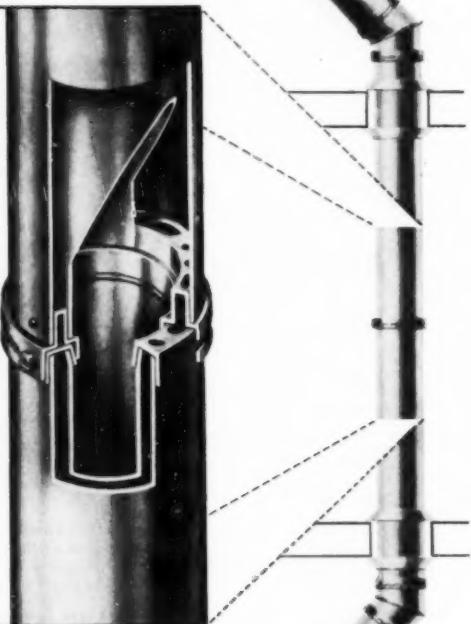
#### SAFE, EFFICIENT VENTING

Double-wall Metalbestos gives a "hot stack" quickly and continuously for complete removal of fumes — yet air-insulated outer pipe remains cool even after prolonged operation. Precision-made couplers seal both inner and outer pipes ... cannot pull apart to cause dangerous leaks.

3

#### DURABLE AND DEPENDABLE

All-aluminum, sturdy construction eliminates costly replacements due to damage during shipping, handling or installation. Metalbestos will not crack or shatter, and is highly resistant to corrosion — forms a rigid, dependable venting system.



for the **best** job use

# METALBESTOS



Write today  
for Free VENTING MANUAL  
This useful manual, "Venting of Gas Appliances," contains  
important rules and helpful tips  
on approved venting practices. No cost or obligation.

Write today to Dept. B.



# METALBESTOS

DIVISION

WILLIAM WALLACE COMPANY • BELMONT, CALIF.

"Here's all you need  
to set a Magic Dial  
thermostat for  
most any make  
control!"



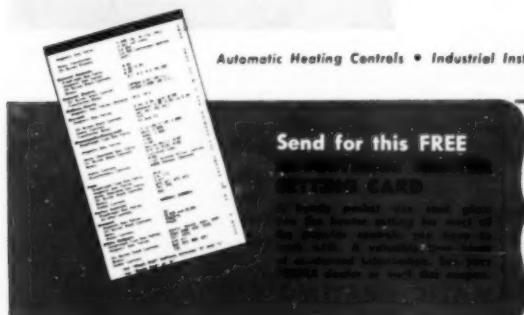
**Built-in Adjustable Heater  
is a **PERFEX** Exclusive**

The "Magic Dial" Thermostat can be set, by simply turning a screw, to the required setting for almost any primary control. It's as easy as that — only one model to stock — and no assortment of heaters to worry about.

This is just another one of the many advanced, *exclusive* features found in the Perfex "Magic Dial" Thermostat which has made it foremost in the industry.



- ★ **EXCLUSIVE  
Adjustable Heater**
- ★ **EXCLUSIVE "Magic Dial"**
- ★ **EXCLUSIVE two-wire  
Twin Contacts**
- ★ **EXCLUSIVE  
enclosed contacts.**



**PERFEX**  
CONTROLS YOU CAN TRUST

PERFEX CORPORATION, MILWAUKEE, WISCONSIN  
In Canada, Perfex Controls, Ltd., Guelph, Toronto 1

PERFEX CORPORATION  
Controls Division  
500 W. Oklahoma Ave., Milwaukee 7, Wisconsin

I'd like a copy of the new Adjustable Heater card.

Also include a copy of the new Perfex Condensed catalog.

Firm \_\_\_\_\_

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

"Never spent so little for heating since I put in a Winkler LP\*."



"What an oil burner—where'd you buy it?"

## GOOD NEWS TRAVELS FAST!

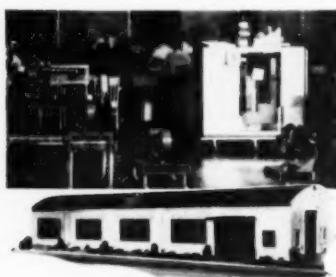
A recent survey proves that Winkler dealers profit from a huge force of *unpaid salesmen*! These are owners so delighted with Winkler LP Burner performance that they urge friends to buy.

That's why the Winkler franchise is like a rolling snowball—producing increasing profits, year after year. *It is a growing asset.*

This owner enthusiasm for Winkler Products is not surprising . . . because Winkler makes *quality* heating equipment. The development and production of this equipment is not secondary to some other phase of the company's business. *Heating equipment is our lifeline, not a sideline!*

Remember, too, that the Winkler line of furnaces, boilers, stokers, oil and gas burners is now so comprehensive that virtually every type of buyer is a prospect.

Write today for information on how to obtain the Winkler franchise.



**41%**  
OF WINKLER *LP*\*  
BURNERS  
ARE PRE-SOLD THROUGH  
OWNERS' RECOMMENDATIONS



### Winkler Institute trains salesmen to make money

The Winkler Training Institute is open to all Winkler dealers and their personnel. Here in the Sales and Engineering Schools, Winkler trainees hear . . . see . . . and actually do the things which assure successful selling and correct application of Winkler Automatic Heating Equipment.

# WINKLER

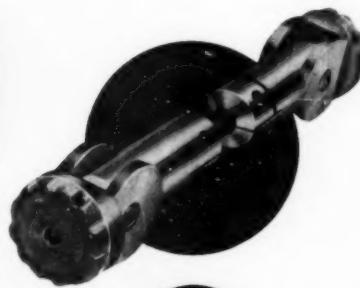
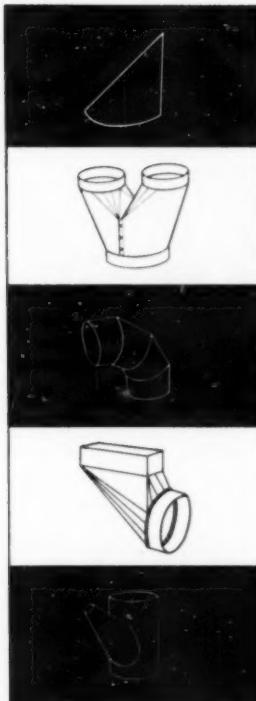
AUTOMATIC HEATING EQUIPMENT  
U. S. MACHINE CORPORATION • Dept. A-122, Lebanon, Ind.

# THIS IS IT!

**LAY OUT ANY PATTERN IN A FEW MINUTES WITH THE NEW JET PATTERN DEVELOPER**

**SAVES** { TIME  
MATERIAL  
LABOR  
SPACE } **MONEY**

With the Jet Pattern Developer any mechanic can quickly and easily layout Square to rounds, Cones, Elbows, Intersections, Pair Pants, Register Booths, Dormers (any pitch), Transitions, Three piece transitional elbows round to square and thousands of other complex patterns. In fact we haven't found a pattern yet that can't be laid out in a few minutes time with this amazing new tool.

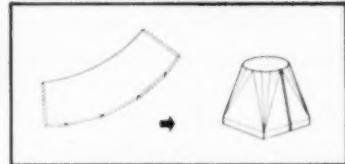


**ONLY \$69.50**

COMPLETE  
WITH 30  
TEMPLATES



Simply attach templates, adjust for any pitch or offset and roll out your complete pattern. That's all there is to it.



Eliminates triangulation and radial lines, trimming, waste, large pattern stocks, and hours of time. You will save the entire cost of your JET PATTERN DEVELOPER in less than a week.

**MAIL THIS COUPON TODAY!**

**H. OWENS COMPANY, DISTRIBUTORS**  
9300 Venice Blvd., Culver City, California

Please send \_\_\_\_\_ Jet Pattern Developer(s) @ \$69.50 each.

- Full amount enclosed send Postpaid
- Send C.O.D. I will pay postage
- Send more information

NAME.....

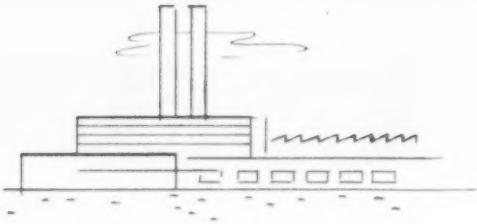
ADDRESS.....

CITY.....

STATE.....

10 Day Money Back Guarantee—Please include state tax

*leading manufacturers  
of heating equipment*



# depend on field

*for a star performance*

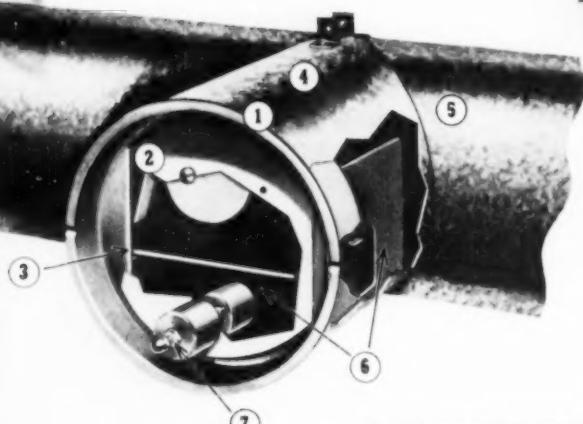
## **The Field Control is Quick, Easy and Simple to Install**

Installed in a matter of minutes, the Field Draft Control provides complete accuracy, dependable performance for years on end. Its higher efficiency means finer performance for any heating plant. That's why Field is recommended by most manufacturers for use on their heating plant. It saves its difference in cost many times over every heating season.



**field**

### **DRAFT CONTROLS**



See the new Field Draft Control for Gas-fired Heating Plants at AGA show. Booth No. 238

**FIELD CONTROL DIVISION of H. D. Conkey & Co. • Mendota, Illinois**

AFFILIATES: Conco Building Products, Inc. — Brick, Tile, Stone • Conco Materials Handling Division — Cranes, Hoists

1 — **Made of heavy materials —**  
Field Controls Last Longer.

2 — **Balanced at factory —**  
Eliminating weight variations which could affect control's accuracy.

3 — **Rocker type hinge pin —**  
Quickly responsive, no friction. No sticking.

4 — **Long collar —**  
No warping or clogging due to heat or soot, no service calls.

5 — **Free smoke passage —**  
A Field Control never blocks the flue.

6 — **Side wings and fitted gate —**  
More accurate because opening in control increases more uniformly.

7 — **Factory adjusted —**  
Set to maintain 06" draft until instrument setting is made.

# a SMART MOVE...

## PRESSURE BLOWERS

High pressure air moving or cooling problems are quickly solved with the Peerless Pressure Blower. Blades are dynamically balanced and self-cleaning. Heavy-gauge steel base and housing.

## PENTHOUSES

Economical in cost, installation and operation. Can be matched with any Peerless Electric fan. For factories, laundries, stores, clubs and auditoriums.

## DIRECT DRIVE UTILITY BLOWERS

For boiler rooms, restaurants, wash-rooms, etc. Housings constructed of 16-gauge steel. Peerless job-matched motors are available for all types of electrical currents.

## FURNACE BLOWERS

A ruggedly-constructed unit that cuts installation time. Positive belt drive with job-matched motor gives quiet, smooth performance. Ideal for quick installations and added profits.

## BELT DRIVE UTILITY BLOWERS

A completely assembled blower with an adjustable motor pulley for various speeds. Housing can be tilted when exhaust angles are required.

## BLOWER-FILTER PACKAGE UNIT

A complete unit, including filters, ready for installation. A heavy-gauge steel unit, modern in design, with baked enamel finish. Has balanced wheels, large access door and direct-belt drive. Operates quietly and is easily serviced.

## INDUSTRIAL EXHAUST FANS

A vital part of the full Peerless line! For warehouses, foundries, etc. rooms, etc. Continuous duty fan with totally enclosed ball-bearing motors. Can be horizontally or vertically mounted. Stock for more industrial sales!

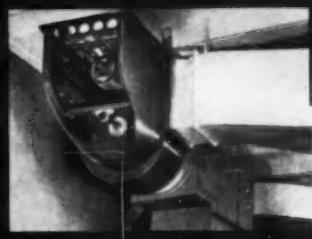
SMOKEST PERFORMERS ON THE MARKET

**Peerless**  
**Electric**

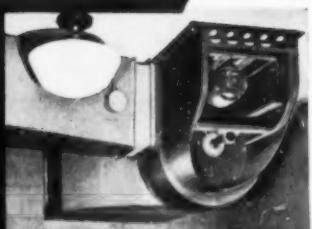
FAN AND BLOWER DIVISION

THE PEERLESS ELECTRIC COMPANY

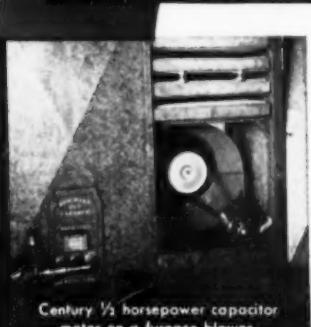
1405 WEST MARKET ST. . . WARREN, OHIO



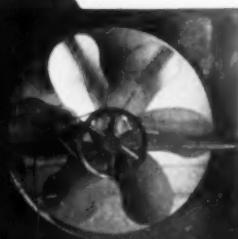
A Century fractional horsepower motor on an overhead blower in a National Guard Armory used to exhaust air from the firing line of rifle range.



Century fractional horsepower motor used on an overhead blower in the same Armory to exhaust air from a ticket office and men's wash room.



Century 1/2 horsepower capacitor motor on a furnace blower.



1/6 horsepower Century motor on a ventilating fan.

## WHY *Century* MOTORIZED EQUIPMENT KEEPS YOUR CUSTOMERS SATISFIED...

The motor specifications—where skillfully selected—to assure the **TOP PERFORMANCE** and **DEPENDABLE QUIET SERVICE** that is built into each class of equipment.

Refrigeration compressors require one combination of operating characteristics and specifications—fans and blowers another combination—various types of heating equipment still another.

In over 50 years, Century has developed a wide line of types of motors with literally hundreds of specifications to choose from. It is easy to **ENGINEER YOUR PRODUCT PERFORMANCE—THROUGH SKILLFUL MOTOR APPLICATION.**

If you have motor service problems, phone or write to any of Century's 28 District offices regarding Century's national network of service stations—the motor exchange plan will serve you whether your motors are in or out of warranty.

Specify Century Motorized Equipment—get top equipment performance—dependable quiet service—keep your customers satisfied.

**CENTURY ELECTRIC COMPANY**  
1806 Pine Street • St. Louis, Missouri

In Principal Cities



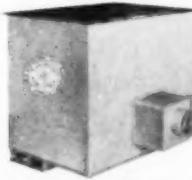
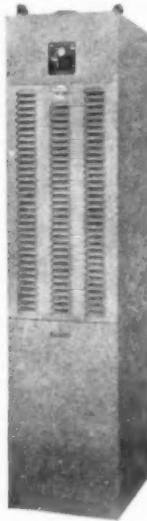


# Makes All 4

Offer your customers heating units that bear the JZ trademark. It identifies home heating units that are easy to sell, make workman-like installation and guarantee customer satisfaction.

## CENTRAL HEATERS

John Zink Central Gas Heaters are available in Vertical or Horizontal Forced air models. Suitable for installation in attic, closet, basement, utility room, under the floor, or as a suspended heater. Attractively finished.



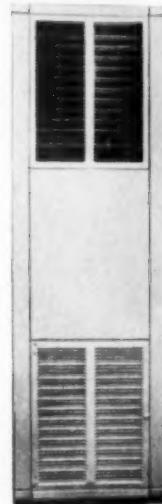
## FLOOR FURNACES

John Zink Gas Fired floor furnaces are available in 5 conventional and short models with input ratings from 30,000 b.t.u./hr. to 85,000 b.t.u./hr. When equipped with safety pilot and automatic temperature control they are a complete heating plant in a package.



## UNIT HEATER

The John Zink UHS Gas-fired fan type suspended heater is a complete, packaged unit and fully automatic. A. G. A. approved for natural, mixed, manufactured or LP Gas.



## WALL HEATERS

John Zink's new WH-25 Recessed Wall Heater fits standard 2" x 4" stud partitions on 16" stud centers, is barely 58" high. Attractive modern design and finish. Available in standard and radiant styles.

FOR 1953

All-Weather HEATING & COOLING  
UNITS AVAILABLE

It's easy to supply your customers from the John Zink line.

**JOHN ZINK COMPANY**  
4401 South Peoria      Tulsa 5, Oklahoma



**The U. S. Steel Supply team that gives you  
personalized service**

**Our telephone salesman is  
your "on-the-spot" assistant!**



OUR telephone salesmen are trained to look at your business from *your* viewpoint. They are your "on-the-spot" assistants in our organization. When you want steel or supplies or need information quickly about availabilities, priorities or prices, pick up your phone and call one of our salesmen. He can turn your inquiry into immediate action and follow it through, if necessary, until you receive the steel or information you want.

Most of our customers call their telephone salesman, because it suits their convenience to place their orders or inquiries by phone. It gets their steel buying done fast! Whatever your reason for contacting one of our telephone salesmen, you'll find that your business is handled promptly, intelligently, courteously and with the personal interest that marks every member of the U. S. Steel Supply team.

**YOUR "ONE CALL" SOURCE OF STEEL SERVICE**

**U.S. STEEL SUPPLY**



UNITED STATES STEEL SUPPLY DIVISION, UNITED STATES STEEL COMPANY

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**UNITED STATES STEEL**

# FOR PERIMETER HEATING & COOLING

# NEW TITUS NO. 100 PERIMETER DIFFUSER



SAVES UP TO

55%

#### AMAZING COOLING AND HEATING EFFICIENCY.

Diffuser directs blanket of air over both entire wall and into room proper. Makes tremendous fuel savings possible . . . House more comfortable . . . more healthful to live in . . . better for the children. Stops outer wall chill.

#### CONTROLS AIR LONGER . . . WITH 180° DIFFUSION OF AIR STREAM!

Four baffles direct air stream over entire outside wall, from floor to ceiling. Also directs air into room. Eliminates floor drafts and "Cold Film" on outside walls.

#### ULTRA MODERN FINISH

Titus Diffusers are made with a beauty that blends with the room. Furnished with finish coat. No additional expensive painting required. Made of heavy duty 20 gauge steel to withstand floor level abuse.

#### GUARANTEED QUALITY

Attractive Appearance . . . competitively priced TITUS DIFFUSERS meet and beat competition, price wise—beauty wise, product wise. Regardless of the type of register installations you are now doing, you'll want to place a trial order for this amazing new diffuser for comparison purposes.

#### IMPORTANT

Ask about Titus' new Package Plan with complete diffuser set up for 4-5-6- or 7-room houses.

#### FREE LITERATURE . . . WRITE TODAY

##### TITUS INCORPORATED • WATERLOO, IOWA

Gentlemen: Rush me complete information on this amazing new Perimeter Diffuser #100 . . . plus checked items!

RETURN AIR GRILLES       PKG. PLAN FOR 5 ROOM HOUSE  
 ENGINEERING DATA       PKG. PLAN FOR 6 ROOM HOUSE  
 PKG. PLAN FOR 4 ROOM HOUSE       PKG. PLAN FOR 7 ROOM HOUSE

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

By: \_\_\_\_\_

#### KEEPS BIDS LOW

Here's the **NEWEST MOST REVOLUTIONARY ADVANCE IN AIR DIFFUSER INSTALLATION**. There is simply no comparison between TITUS PERIMETER DIFFUSERS and ordinary registers. TITUS DIFFUSERS install *so quickly, so easily*, and with such *drastic cuts in labor and material* you cannot afford to use old styles. These diffusers require about  $\frac{1}{4}$  the duct work, and much less than  $\frac{1}{2}$  the labor of ordinary installations. Once your men install TITUS PERIMETER DIFFUSERS, cost comparisons will *positively prove* these amazing labor and product economies.

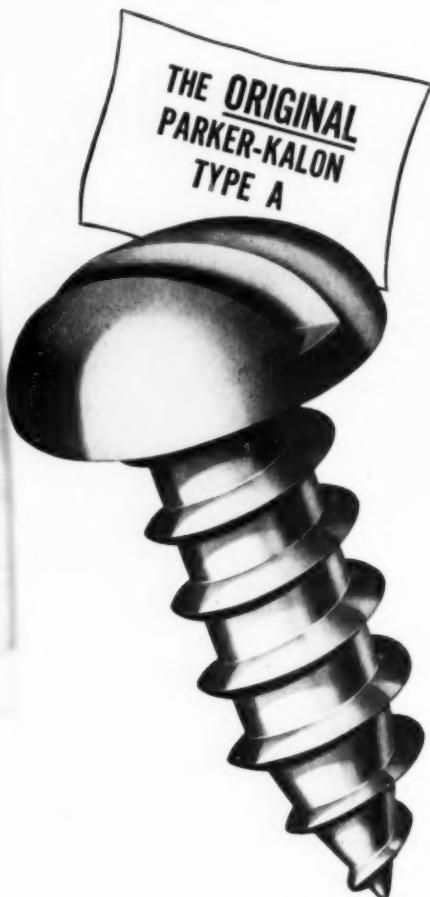
#### ELIMINATES OLD SLOW INSTALLATION METHODS

No roughing-in necessary. Diffuser slips easily onto boot. There is no cutting into wall or plaster.

#### CAN BE INSTALLED WITH EQUAL EASE IN OLD OR NEW BUILDINGS

**AVAILABLE FOR IMMEDIATE DELIVERY**

# THE STILL **FIRST** SHEET METAL SCREW WITH SHEET METAL MEN



*"Screws are something like people. If they lose their heads under pressure—if they turn out to be 'softies'—if they don't 'square up', they can slow up a job for sure. We avoid that by specifying Parker-Kalon."*



*"My dad put me wise to the difference in Sheet Metal Screws. He's used P-K Type A since he first started the business and never found anything to equal them."*



*"There's a 'best buy' in everything, and in Sheet Metal Screws we've found it's Parker-Kalon. Hardness and toughness is balanced just right, and threads are sharp and clean from head to gimlet point—in every screw. And that saves time . . . plenty!"*

**DELIVERIES ARE BETTER  
• SPECIFY P-K**

## GET YOUR COPY OF THIS BOOKLET

Tells "where to use what" type of screw in all types of sheet metal, including stainless steel. Gives complete information on application. Ask your P-K Distributor for Form 480. Or, write Parker-Kalon Corporation, 200 Varick St., New York 14.



## PARKER-KALON®

*The Original*  
**SELF-TAPPING SCREWS**

AND OTHER FASTENING DEVICES

So much more

**Heating Area**

So much faster

**Heat Transfer**

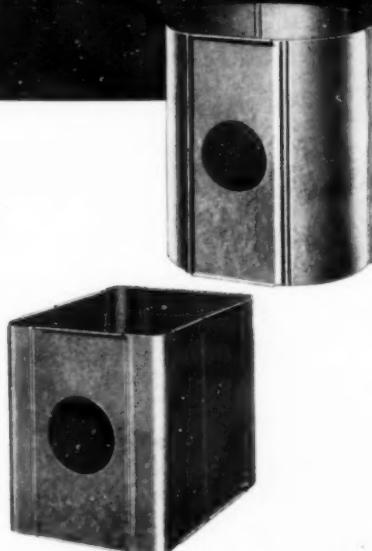
So much better

**Heating Performance**

*that's what you get*

with this

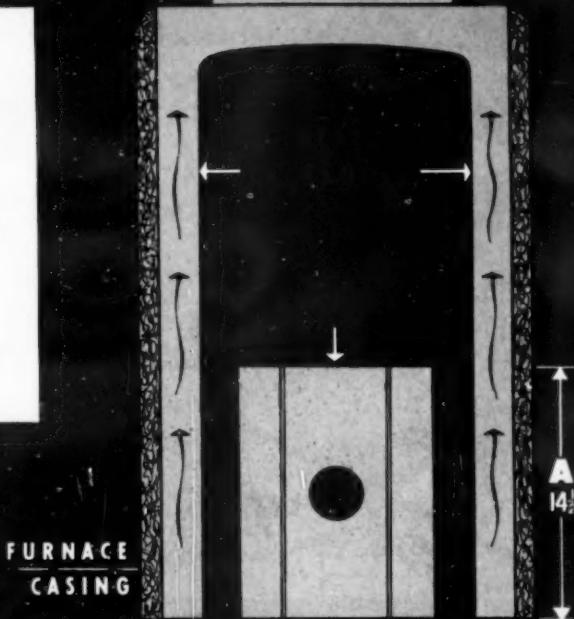
**HEAT-RESISTING STAINLESS  
STEEL COMBUSTION CHAMBER**



*Check these features*

**Stefco**

**STEEL COMPANY**



# PANELOX®

Count the advantages—and you'll know why more and more of America's leading manufacturers of oil fired furnaces are switching to PANELOX Heat-Resisting Stainless Steel Combustion Chambers!

**MORE HEATING AREA**—As shown in the diagram (A) the Panelox greatly increases the actual heating area of the heat exchanger—nearly double in some cases. That means *more* heat transferred and utilized—*less* heat up the chimney.

**FASTER HEAT TRANSFER**—Because there are no bricks to act as insulation, heat from the Panelox chamber is absorbed directly into the walls of the heat exchanger (see arrows). That means faster heat transfer—keeps the Panelox from exceeding 1200° to 1300°F. Heat exchanger wall will not get over 700°F.

**BETTER HEATING PERFORMANCE**—Heats up in seconds, for proper combustion almost instantly. Eliminates override, for greater comfort, better room temperature control. Provides quicker, cleaner, quieter heat, saves fuel.

No other combustion chamber offers you—or your customers—so much. Write—*now*—for full details, sizes and prices.

- Interlocking panels slide together without tools.
- Absolutely no backfill, cement or insulation.
- No breakage in shipment or handling.
- Far less shipping weight than other types.
- Four thicknesses of metal at seams—provides extra strength and rigidity.
- Panels made in several sizes for easy fitting to a wide range of chamber dimensions.
- For round, square, rectangular or pear-shaped installations.

We have steel for immediate shipment  
of PANELOX Combustion Chambers  
Heating Equipment Div. • Michigan City, Ind.

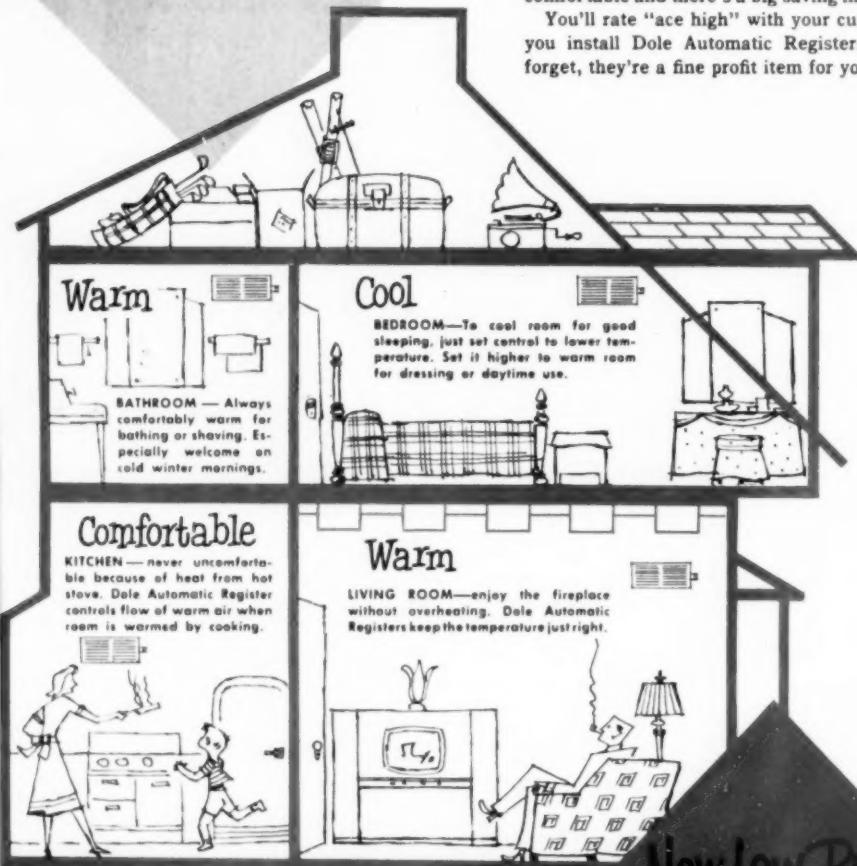
...are "made to order" with

# Individual Room Temperatures

## DOLE AUTOMATIC REGISTERS

With Dole Automatic Registers, the temperatures of every room in the house can be individually controlled to suit the comfort of the occupant. The entire system is automatically balanced, everyone is comfortable and there's a big saving in fuel bills, too.

You'll rate "ace high" with your customers when you install Dole Automatic Registers—and, don't forget, they're a fine profit item for you.



Control with Dole

# DOLE

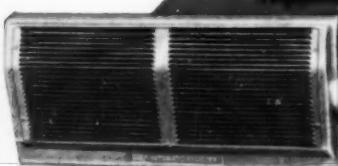
THE DOLE VALVE COMPANY  
1933 Carroll Ave., Chicago 12, Ill.

Representatives in Principal Cities

New Low Price

Trade List  
Only

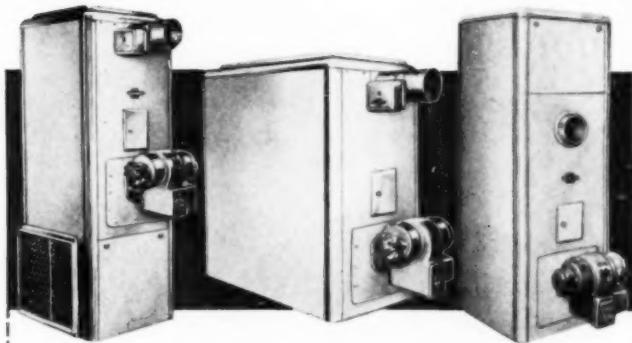
**\$12.00  
EACH**





Look! A completely new series  
of Oil-Fired Conditionairs

# Here are the strikingly New DELCO-HEAT OPC-75 Conditionairs



**OPC-75H**—especially designed and built for utility room, basement or recreation room installation...or wherever floor space is limited. 75,000 Btu per hour capacity. 67  $\frac{3}{4}$ " high, takes only 25 x 25 in. floor space.

**OPC-75LD**—ideally suited for basement or recreation room installation. Blower filter unit is enclosed in cabinet housing. 75,000 Btu per hour capacity. 49" high, takes 25 x 42  $\frac{1}{4}$  in. floor space.

**OPC-75HR**—popular counterflow model. Features a downward flow of air into ducts installed in concrete slab or below the floor. 75,000 Btu per hour capacity. 72  $\frac{1}{4}$ " high, takes only 25 x 25 in. floor space.

With all these great new features—new advantages

- New streamlined appearance, full-length case panels—for greater eye appeal, easier sales.
- Two models designed especially for closet, alcove or other high-type installations where space is limited.
- Easier to handle and install—each unit "packaged" for quick, low-cost installation.
- External air filter is accessible from outside Conditionair jacket.
- Powered by the exclusive Rigid-frame Motor for quiet, trouble-free operation.
- Features famous quality-built Series "F" Burner.

With the addition of this great new series of oil-fired Conditionairs, Delco Appliance continues to furnish Delco-Heat retailers the most extensive and competitive line of precision-engineered heating equipment in the entire industry.

Following General Motors policy of "more and better things for more people," Delco Appliance offers new selling opportunities with these brilliantly designed OPC-75 Conditionairs. For complete, detailed information and installation data, send coupon below.



For a good deal

**DEAL WITH DELCO**

DELCO APPLIANCE DIVISION, Dept. AA  
General Motors Corporation, Rochester 1, N. Y.  
Please send me complete information on the new OPC-75 Series Conditionairs!

Name

Firm Name

Address

City  Zone  State

If your product is *here*

your motor is  
*here!*

DISPOSAL UNITS  
DRYERS  
IRONERS  
WASHERS  
STOKERS  
BLOWERS  
OIL BURNERS  
COMPRESSORS  
VENTILATING UNITS  
BENCH TOOLS  
WATER PUMPS  
MILKING MACHINES  
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GM  
GENERAL MOTORS

Now, more than ever before in  
the 35-year history of this  
fractional horsepower motor, it  
is advisable for manufacturers  
to get the Packard proposition.  
There are definite advantages in  
standardizing on Packard motors.

*Packard*  
MADE IN U.S.A.  
TRADE MARK  
Packard Electric Division, General Motors Corporation  
Warren, Ohio

DEPENDABLE APPLIANCE MOTORS FOR THIRTY-FIVE YEARS

# "It's going to save me a lot of those \$5 service calls"

—says dealer Keith Bickle, Denver, about the new Honeywell Flexible Element Furnace Control



Keith Bickle, right, owner of Supreme Heating & Ventilating, pictured with Honeywell sales engineer Bob Fosner

## Give your jobs positive protection! Specify the Honeywell "L486"

The new Honeywell Flexible Element Furnace Control gives your jobs 100% protection all the time. If sensing element ruptures, it breaks burner circuit and starts fan—it's *fail safe*.

Can be mounted inside or outside furnace casing. Snap-switch makes mounting in any position possible. Has easily accessible summer-winter switch. "Out-of-top" model also available. For full facts call the Honeywell office nearest you, or write Honeywell, Dept. AA-12-219, Minneapolis 8, Minn.

**Honeywell**  
MINNEAPOLIS  
First in Controls

"I first tried the Honeywell Combination Furnace Control on the recommendation of my supplier—and it worked out beautifully.

"You see, I figure it costs me about five dollars every time I go out on a service call. The L486 will *eliminate* a lot of those calls. And over a year's time, that's going to save me money.

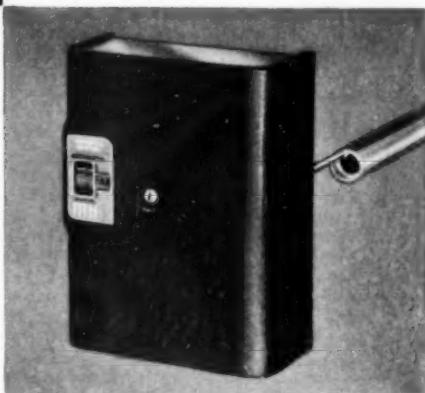
"Honeywell did a masterful engineering job on this control. It's not only better—it's *far better* than anything else like it on the market. It's the first combination furnace control I have ever used that is absolutely *fail safe*; that will give my customers 100% protection while eliminating any danger of fire hazard.

"That new snap-switch makes the mounting job a lot easier, too. Installation time is cut way down, an important factor in view of today's high cost of labor.

"I've already asked my supplier about getting my new equipment through with the L486 already on it—as *original equipment*."



Another Plus-*Profit*  
Product from Honeywell



We're telling 15,000 of your best customers  
the advantages of

## FOLLANSBEE TERNE METAL ROOFING



**N.A.H.B.**

## CONVENTION & EXPOSITION

Conrad Hilton Hotel, Chicago • January 18-22, 1953 • Room 664-A

This is the largest home builders' show in the world. Over 80% of the residential building market in the United States will be there! Potent, ready-to-buy prospects for YOU!

We're telling them *your story*—selling *your services*—demonstrating the value of METAL ROOFING with Follansbee Seamless Terne Metal.

*If you live in or around Chicago, or will be there during the Show, stop in to see us. Experienced personnel will be on hand to discuss your roofing problems. There will be helpful exhibits, samples, installation tips and literature, all FREE, of course.*

The N.A.H.B. Convention is but one of many ways Follansbee is promoting MORE WORK FOR YOU. Here are others:

**ADVERTISING** . . . Every month, hard-hitting Follansbee advertisements are read by more than 300,000 builders, architects, engineers and contractors. These ads are forceful sales messages designed to help you sell America's favorite metal roofing and weathersealing material—Follansbee Terne Metal. Take advantage of them. The market is ripe!

**LITERATURE & DIRECT MAIL** . . . Follansbee is currently sending news, specification and installation bulletins on Terne Metal to architects, builders, contractors, potential home owners all across the country . . . conditioning the market for you.

*Write for this material if you do not already have it.*

### QUICK FACTS ON TERNE WHICH YOU SHOULD KNOW

Get on the Terne bandwagon. There's big profit for you in Follansbee Terne Metal Roofing and weathersealing jobs NOW.

- 40 lb. coated Terne is now available. Order from your favorite distributor.
- Ductile . . . easy to apply.
- Resists electrolysis . . . can be flushed with any metal.
- Durable, weather resistant.
- Strong without excessive weight. Will not flake or peel.
- Available in 30-foot seamless rolls.
- Profitable.

## FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES: PITTSBURGH 30, PA.

POLISHED BLUE SHEETS AND COILS      SEAMLESS TERNE ROLL ROOFING

COLD ROLLED STRIP

Sales Offices — New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents — Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada.

Mill — Follansbee, W. Va.



FOLLANSBEE METAL WAREHOUSES  
Pittsburgh, Pa.      Rochester, N. Y.      Fairfield, Conn.

FOR MORE PROFITS—

Push the gas line  
that fits every heating need—

**fluid heat**  
AUTOMATIC HEATING EQUIPMENT



Don't let your customers' heating requirements stump you! Small home, medium-size, or large—there's a Fluid Heat gas-fired unit that will heat it better, with fewer troublesome service calls to annoy you—and your customers!

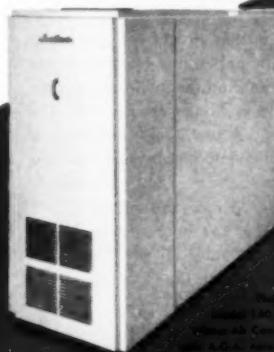
Take a look at the four models shown on this page . . . from Fluid Heat's complete line of gas heating equipment. Modern in appearance, neat and attractive, they're sure to appeal to your customers! What's more, inside these gleaming new cabinets is the best engineered, most dependable gas unit that can be built! Fluid Heat stakes its reputation on that—a reputation built on over 30 years' experience in the heating field!



Start pushing these models today! If you're not already a Fluid Heat dealer, learn how you can cash in on this profitable line. For complete details, write to the address below.



Fluid Heat Model 100 Counter-Row Unit, with A.G.A. rated input of 100,000 B.T.U. per hour.



Fluid Heat Model 90 Counter-Row Unit, with A.G.A. rated input of 90,000 B.T.U. per hour.



Fluid Heat Model 70 Counter-Row Unit, with A.G.A. rated input of 70,000 B.T.U. per hour.

**fluid heat**  
AUTOMATIC HEATING EQUIPMENT

"WORLD'S ECONOMY CHAMPION"

Division of ANCHOR POST PRODUCTS, INC. • 4720 Eastern Avenue, Baltimore 24, Maryland

# EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available, see page 109.

## Gas-Fired Conditioner

TYPE GHA SERIES F gas-fired horizontal winter air conditioner (cast iron), a basement type unit designed for any size home — Richmond Radiator Co., New York. Single units have capacities from 75,000 to 175,000 Btu per hr, while twin units, covered in a single casing and oper-

of 80,000 and a maximum of 112,000 Btu per hr. These models can be used with natural, manufactured, mixed and liquefied petroleum gases, and the company will soon begin production on an oil-fired model. AA 2

## Thin Core Grille

THIN CORE GRILLE specifically designed for doors and partitions from  $\frac{1}{4}$  to  $\frac{3}{4}$  in. thick — A-J Mfg. Co., Kansas City, Mo. For installation, a partition section is cut out, the grille is slipped in, the telescoping auxiliary frame is placed on the other side, and two post screws are tightened. The opening can be cut with keyhole saw, and there is almost  $\frac{1}{2}$  in. tolerance on all sides



ated by one set of controls, handle from 200,000 to 300,000 input Btu per hr. On the single units, the steel enclosure base has channels running the full length, raising the unit  $\frac{3}{4}$  in., thereby allowing installation on combustible floors, the company states. AA 1

## Air Conditioning Unit

MODEL S-W residential air conditioning unit for year-round use — Typhoon Air Conditioning Co., Brooklyn. Changeover from cooling to heating is effected by the flipping of a switch in the living area. The unit, which does not require dampers, is designed for use in new homes or as a replacement for present warm air furnaces. Overall dimensions are 50 x 37 x 70 in. The cooling section can be supplied separately for connection to existing warm air furnaces. Present models are in capacities of 3 and 5 tons cooling, with a minimum heating output

so that normal errors will not show. The grille and frame clamp together tightly, holding the grille in position. No wood moldings are needed. The grille is all steel, with inverted V grilles allowing 80 per cent free area for air passage, but completely screening vision, the manufacturer states. The core only is available in any size to 36 x 36 in. The grille complete with frame is available in any size. AA 3

## Oil Burner

MODEL E oil burner in one size with UL approved rating of 0.60 to 3.0 gph, designed to handle up to 95 per cent of residential requirements — Wayne Home Equipment Co., Fort Wayne, Ind. This model replaces three previous models. Features include a no-drip nozzle, a four-in-one steel baffle plate to control the air needed for all nozzle

ratings to 3.0 gal, a unit air tube gun assembly (shown at bottom-center of illustration), a one-piece cast air cone (top center), cast alu-



minum fan housing to maintain alignment of parts, a hinged transformer with post terminals that contact bronze electrode springs, a built-in junction box and standardized electrical components. AA 4

## Electric Hand Drills

TWO ELECTRIC hand drills, a general duty type with a  $\frac{1}{4}$  in. chuck, and a  $\frac{1}{2}$  in. capacity special duty model — Porter-Cable Machine Co., Syracuse, N. Y. Both models have spindle ball-bearing construction to absorb radial load and end thrust, and gear-type chucks for slip-proof gripping of bits. The smaller size is designed for all-around intermittent use in shops. It weighs 3 lb 6 oz. The other model is built for intermittent production where more power is needed to penetrate metals and other resistant materials. A spade handle at the rear can be changed to vertical or horizontal position, or removed. This model weighs 9 lb. AA 5

## Shell and Coil Condensers

CROSS-FLOW shell and coil condensers designed especially for cabinet air conditioners and other installations where space is limited — Standard Refrigeration Co., Chicago. The vertical 3 ton model is  $8\frac{1}{8}$  in. OD by 16 in. high. The condensers feature low water pressure drop, ac-

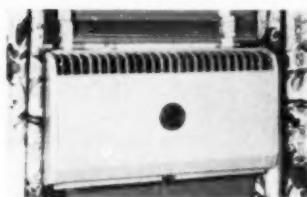
cording to the company. They can be used with either city water or



with cooling towers, and are currently available in capacities ranging from  $1\frac{1}{2}$  through 5 tons, tested to 300 lb pressure. AA 6

#### Window Type Conditioner

NEW  $3\frac{1}{4}$  TON Floating Air window unit for heavy-duty cooling — Friedrich Refrigerators Inc., San Antonio.



There is fully adjustable control, with 24 vertical louvers and three horizontal louvers which make possible selective distribution of the air to suit individual preferences. AA 7

#### Appliance to Control Bacteria in Air Stream

NEW MODEL GLYCOLATOR for furnace application, embodying complete temperature control — Iron City Chemical Co., Valencia, Pa.



The appliance volatilizes Glycosol and introduces it into the air stream in warm air furnaces or stacks for the control of air-borne bacteria and viruses. It is intended to reduce the incidence of colds and other respiratory diseases. The new model treats up to 20,000 cfm of air. Temperature control maintains the correct rate for volatilization. AA 8

#### Venturi-top Chimney Cap

VENTURI-TOP chimney cap designed to correct insufficient drafts — Walker Mfg. & Sales Corp., St. Joseph,

Mo. It is also intended to correct down-draft conditions. Air movement through the hood, flowing through the Venturi throat, creates an up-draft for the maintenance of normal over-fire draft. The vane and hood are mounted on a friction-free pivot which maintains a position away from the wind. The cap is avail-



able to fit 8 in. pipe on round installing base. Four larger sizes, 10, 12, 14 and 16 in., are soon to be made available. AA 9

#### Room Air Conditioners

TWO NEW sizes in room air conditioners, the Super-33 (1/3 hp) and the Twin-75 ( $3\frac{1}{4}$  hp, two compressor model) — Frigidaire Div., General Motors Corp., Dayton. Units are self-contained, providing fresh air, and exhausting, circulating, filtering and dehumidifying it. Controls are on top, with four-way adjustable louvers and vanes at top-front. The twin compressors on larger models operate singly or together. AA 10

#### FOR YOUR CONVENIENCE

12-52

American Artisan  
6 N. Michigan Ave., Chicago 2, Ill.

Please ask the manufacturers to send me full particulars about the equipment mentioned under the following reference numbers in Equipment Developments

(Circle each number in which you are interested)

1      2      3      4      5      6      7      8      9      10  
11     12     13     14     15     16     17     18     19     20

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**MORE  
PROFITABLE  
TO INSTALL**

# **THERMO- DRIP**

*Automatic*

# **HUMIDIFIER**



- VALVES DON'T LIME UP
- SUPER-SENSITIVE THERMOSTAT
- NO STAGNANT POOL TO REHEAT
- OUTSIDE SCREW ADJUSTER
- EASY INSTALLATION
- ONE KIT TO PURCHASE

**Our volume sales prove it... Thermo-Drip gives furnace owners greater customer satisfaction.**

**Prospects easily see the advantages of humidifying by automatically dropping water on a sizzling hot stainless steel pan.**

Too, it's easy to demonstrate why this method is the most efficient, most dependable way to put moisture in the air.

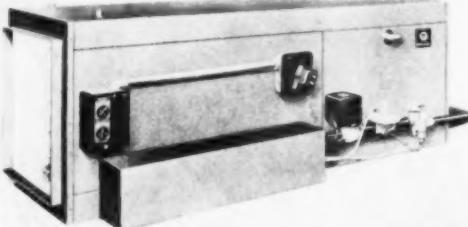
Yes—Thermo-Drip gives faster, most efficient vaporization. Write today for FREE literature.

Dept. A-122

**Automatic Humidifier Co.**  
CEDAR FALLS, IOWA

#### **Winter Air Conditioner**

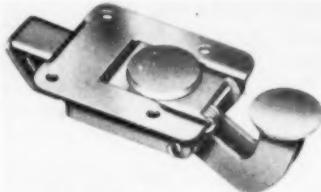
SUNBEAM PAWNEE horizontal automatic gas-fired winter air conditioner, built for attic and suspended installation in small and medium sized homes, where floor space is at a premium — American Radiator & Standard Sanitary Corp., Pittsburgh. It is intended for perimeter installations, conventional duct systems, or for use as a unit



heater. The conditioner burns manufactured, natural, mixed and liquefied petroleum gas. It is available in four sizes, AGA rated at 10,000, 60,000, 30,000 and 100,000 Btu per hr input. Featured are a heavy steel heating element and a slotted port type burner. The unit operates on 115 volt, 60 cycle, a-c current. AA 11

#### **Pushbutton Flush Latch**

PUSHBUTTON FLUSH LATCH (designed part No. H-4100) designed for use where access doors are installed in duct systems to facilitate cleaning procedures, and where neatness of appearance is essential — Hartwell Co., Los Angeles. The only exposed parts are the recessed, completely flush, circular trigger button and close button. Fingertip pressure opens the latch, which is operated



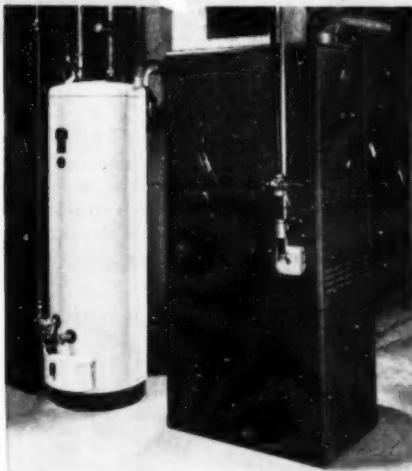
by a natural rotation of the hand, giving a push and lift action. As the forward button is depressed, the rear button raises, providing a grip for opening the door. The only cutout required can be conveniently made with a drill, the manufacturer states. The latch is available in stainless steel, cadmium plated cold rolled steel, or aluminum alloy. AA 12

#### **Summer Conditioner**

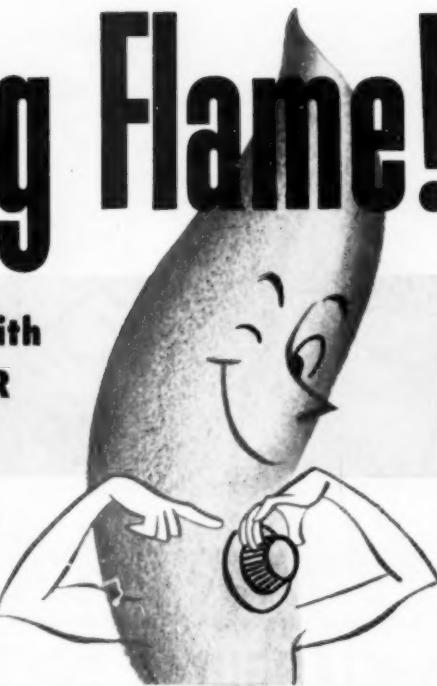
ROOM AIR CONDITIONERS (1953 line) in which the air is passed twice through the cooling coil and filter before being released into the room — Carrier Corp., Syracuse, N.Y. The unit draws air in through the sides of the front grille, handling it at low velocity for quiet operation. Units can be installed in a window so that the grille extends only as far as the line of the curtain or drapes. This is possible because all air inlet and outlet grilles have been eliminated from the sides, top and bottom of

# Modulating Flame!

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WINTER AIR CONDITIONER



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Flame  
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Tunes  
Itself



Here is a furnace with a modulating burner that automatically and constantly replaces heat loss at the exact rate of loss! No more on and off burner cycles...no more up and down room temperatures.

The burner flame of the A.O. Smith Winter Air Conditioner tunes itself *continuously* to changing heating needs...the furnace adjusts itself to the slightest weather change. It "thinks for the thermostat"!

Living-level heating...the CONTINUOUS COMFORT assured by A.O. Smith winter air conditioners...is made possible by:

1. Exclusive *Magic Heat Control* which continuously measures the rate of heat loss and automatically adjusts gas input to the...
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3. Exclusive *Duo-Level Blower Control* which automatically varies the velocity of constantly circulating filtered air in accordance with the heat output.

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For complete information write A.O. Smith Corporation, Permglas-Heating Division, Dept. AA12-52, Kankakee, Illinois.

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the unit, which is completely enclosed and insulated in a box of girder construction. The unit can also be set into a wall with only the decorative grille extending into

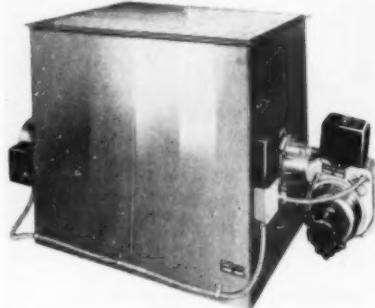


the room. The window units are offered in six sizes ranging up from  $1/3$  hp, and the console models in 1 and  $1\frac{1}{2}$  hp.

AA 13

### Forced Warm Air Floor Furnace

FLOOR FURNACE fired with a gun-type flanged oil burner, designed for quiet operation — Delta Heating Corp., Trenton, N. J. Approved to burn No. 2 fuel oil, the burner is equipped with a fuel pump capable of lifting oil from an oil tank located at lower-than-furnace level. Two sizes are available: 70,000 and 80,000 Btu per hr. A 10 in. fan circulates the warm air and a built-in



suction box permits installation of 4 in. round return ducts from hard-to-heat distant rooms. Both models permit installation in narrow crawl-space areas. The furnace measures  $29\frac{1}{2}$  in. deep, the casing being 24 x 32 in. at the floor opening.

AA 14

### Smoke Tester

TRUE-SPOT smoke tester which provides a smoke spot record of oil burner installations by pumping a sample of the combustion gases from the furnace flue through filter paper — Bacharach Industrial Instrument Co., Pittsburgh. According to the company, "pulling effort" required to operate the suction pump has been reduced by almost 50 per cent. Armored rubber tubing between the head of the instrument and the sampling tube enables the operator to draw the flue gas sample in close quar-

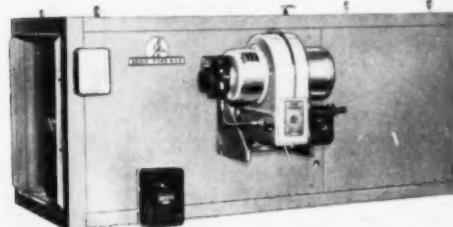
ters, from any position, without danger of damaging the sampling tube, the company states. Discoloration on



the test paper is compared with nine shadings on a "soot scale" provided with the equipment. AA 15

#### **Oil-Fired Furnace**

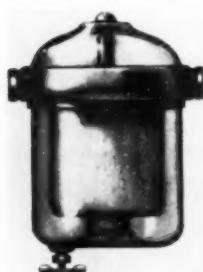
HORIZONTAL PRESSURE atomizer oil-fired furnace with Btu bonnet output of from 30,000 to 180,000 Btu — Iron Fireman Mfg. Co., Cleveland. It is delivered completely assembled, and is installed by suspension from the eyebolts, which are integral parts of the unit. Burner parts are supported within a heavy gauge frame. Both blower and motor are cradled in rubber to absorb vibration.



tion. Filters of the spun glass type are provided, and filter racks may be mounted on the top, bottom, end, or either side. A series of corrugated flue sections, nested side by side, concentrates a great amount of heating surface in the path of the blower, the company states. In large single rooms requiring more than 180,000 Btu, multiple units may be installed. AA 16

#### **Fuel Filter**

SETTE MODEL KS fuel filter, incorporating a pre-screening top section in addition to a large Microstone ceramic filter element, designed to operate with the largest oil burner installations — Marquart Mfg. Co., Oakland, Calif. Resistance to fluid is scarcely more than that imposed by the  $\frac{3}{8}$  in. inlet and outlet tube fittings, the manufacturer states. The top 120 mesh pre-screening section can be cleaned independently. A drain cock provides for removal of sediment or water in the main filter bowl. A transparent pre-screening dome cover and filter bowl allow user to see when either section needs cleaning. All service operation may be performed without disturbing the line connections. The unit is recommended by the company for use on the suction side of pressure fuel feed systems. AA 17



provides for removal of sediment or water in the main filter bowl. A transparent pre-screening dome cover and filter bowl allow user to see when either section needs cleaning. All service operation may be performed without disturbing the line connections. The unit is recommended by the company for use on the suction side of pressure fuel feed systems. AA 17



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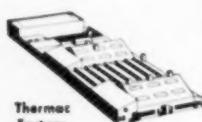


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#### Association Activities —

(From page 75)

percentages, overhead, and similar topics related to improving present estimating methods. Included in the correspondence read was a letter from Angelo Hoffman, president of the Sheet Metal Contractors' National Association, commending the group on its acceptance of the recently published *Code of General Sheet Metal Work*.

#### Canadian Institute Meets

THE 12TH ANNUAL meeting of the Canadian Institute of Stove and Furnace Manufacturers was held in the Chateau Frontenac Hotel in Quebec City on December 1 to 3.

#### Gas Institute Hears About Warm Air Heating

AT THE regular meeting of the Institute of Gas Heating Industries, Inc., held in October, William Nessell, director of field research for the National Warm Air Heating and Air Conditioning Association discussed present trends in warm air heating. He covered such topics as warm air diffusers, cold air returns and small pipe systems. Present were 121 members and guests.

#### ASME and AIME in 15th Annual Fuels Conference

THE 15TH ANNUAL Fuels Conference of the American Society of Mechanical Engineers and The American Institute of Mining and Metallurgical Engineers was held on October 30 and 31 in the Bellevue Stratford Hotel, Philadelphia. Engineers from several states met to hear lectures on the operation of domestic stokers, the use of anthracite, the preparation of coal, and special problems of coal and ash handling.

A symposium on domestic stokers took place on Thursday morning, with addresses by Professors T. S. Spicer, R. J. Grace and C. C. Wright of the Division of Fuels Technology, The Pennsylvania State College; Reginald L. Bush and Charles H. Sawyer of the Coal Division of Eastern Gas and Fuel Associates, Pittsburgh; and Raymond C. Johnson, Anthracite Institute, Wilkes-Barre. Howard A. Herder, Sahara Coal Company, Chicago, and Carroll F. Hardy, Appalachian Coals, Cincinnati, were co-chairmen of this symposium.

#### Indiana Group Provides Indoor Comfort Program

FOLLOWING THE regular dinner meeting of the Greenfield, Ind., Kiwanis Club recently, H. W. Meggs, director of the Department of Public Information, Sheet Metal and Warm Air Heating Contractor's Association of Indiana, presented a program built around the "Seven Steps to Indoor Comfort." The group of 40 members expressed interest and enjoyment in the program.

#### Heating Wholesalers' Committees to Meet

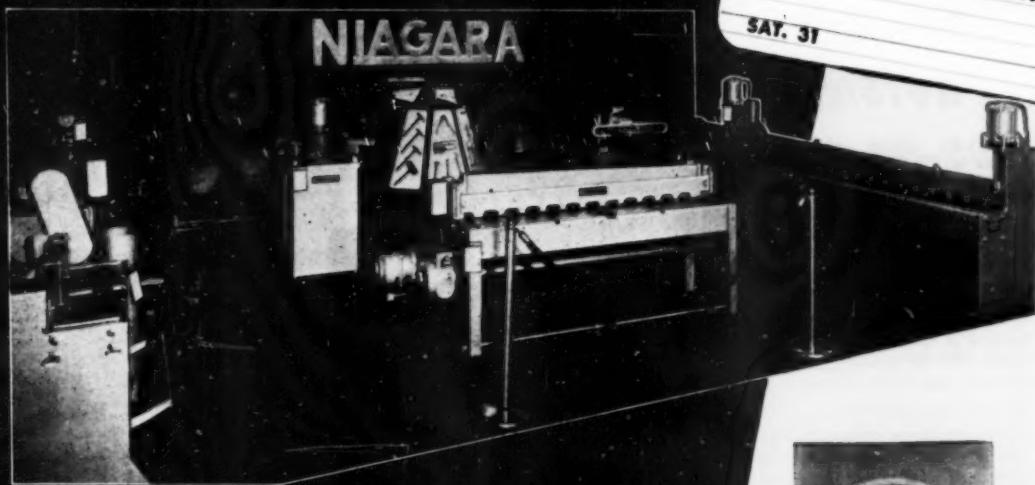
THE INDIVIDUAL committees of the National Heating Wholesalers' Association, Inc., will meet on January 27, at the Congress Hotel, Chicago, prior to the annual meeting.

*A Note to Remember*

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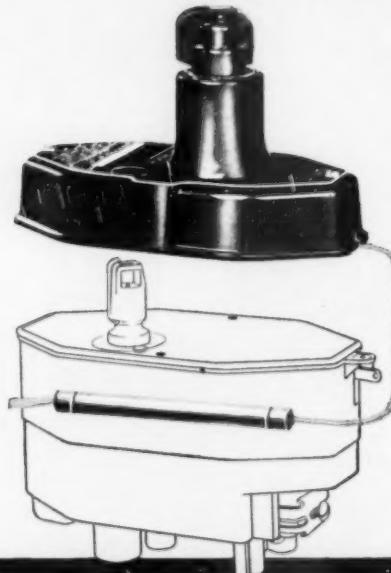
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**ADD-ON CONTROL**

The vaporizing oil heater business is *big* business—especially when you deal with **DETROIT**. That's because hundreds of thousands of heaters currently in use, plus thousands more waiting to be sold are equipped with **DETROIT** manual float valves. This provides a tremendous market for the new **DETROIT** CRC-239-MP Add-on—and that's where you come in!

Let all your space heater and float valve customers know about this remarkable new **DETROIT** control that will provide them with complete low-cost thermostatic control of their heating unit. When they know how easy and inexpensive it is for them to own this outstanding control that brings them true automatic heating comfort, you'll be well on your way to an extra sale with an extra profit! See your **DETROIT** wholesaler today for a complete demonstration.



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## NEW LITERATURE

### Small Pipe System for Warm Air Heating

CATALOG CONTAINS full illustrations and specification sheets covering a small diameter pipe system for forced air heating installations having a heat loss of from 50,000 to 450,000 Btu—Jettroaire Corp., McKeesport, Pa. The system is available in gas and oil, but is not applicable to coal fired heating. The system's applicability to slab type and crawl-space type home construction is discussed. Installation instructions and engineering data are given for the panels, supply ducts, return grilles or registers and return ducts, etc., and various roughing in dimensions are given. According to the catalog, average velocity at warm air discharge point does not exceed 275 to 350 fpm; at cold air intake on panel, it is 75 to 125 fpm; and at main cold air return grille it does not exceed 300 fpm. There is a section for the heating installer on calculating heat losses, and a fuel consumption calculation method is given.

AA 101

### Sheet and Plate Fabrication

BROCHURE (37 pages) describes a fabricating plant, illustrating typical parts and products which are made from galvanized and black sheet steel, a range of alloys, plate up to  $1\frac{1}{2}$  in. thick, and light structurals — Kirk &

12-52

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Blum Mfg. Co., Cincinnati. Broad classifications cover breeching and casings, guards, cabinets, stampings, forms, equipment parts, tanks, electrical enclosures, etc. Plant data covers shearing, contour cutting, welding, assembly, structural fabrication, etc.

AA 102

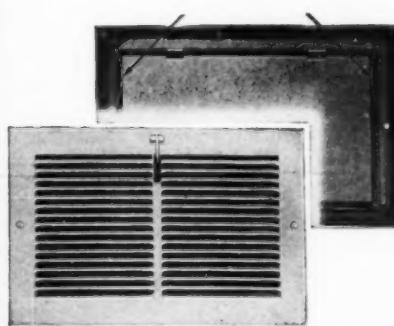
### Proportional Air-Gas Mixer

BULLETIN L-700 (four pages) illustrates, and gives capacities, dimensions and specifications for the Vari-Set proportional mixer with adjustable jet, designed to sim-

(Please Turn to Page 112)

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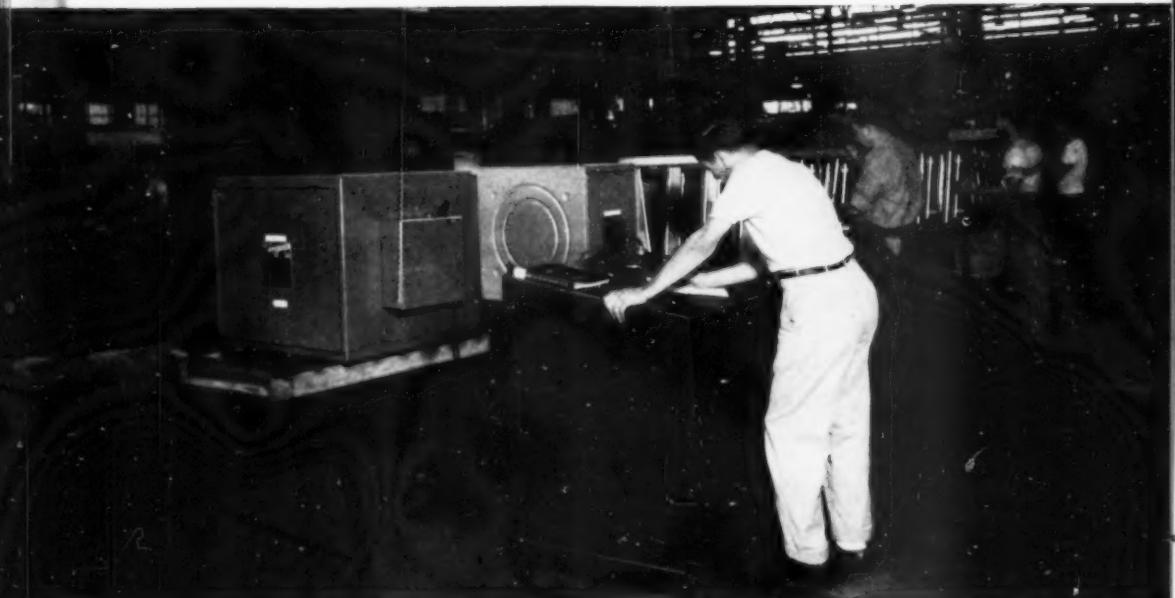
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**15,000,000 VOLTS** flash 50 feet between giant lightning generators in General Electric's High-voltage Engineering Laboratory.

Tests and research performed here make many improvements in various types of high-voltage equipment.

## MAN-MADE LIGHTNING



**TESTING AND ASSEMBLY** of Electro-Klean units equipped with G-E Power Pads takes place in American Air Filter's Louisville plant.



**MR. WILLIAM REED**, president of the American Air Filter Company says, "We feel that the G-E power pack we use is one of the major advances in this field."



**AAF'S ELECTRO-KLEAN UNIT**, shown above, relies upon General Electric power pack to supply high-voltage direct current needed for electrostatic precipitation process. Power pack can be seen mounted at left of larger unit.

# HELPS CLEAR THE AIR

## High-voltage research aids in development of power pack for home air-filter equipment

Today at General Electric's High-voltage Engineering Laboratory in Pittsfield, Mass., 15-million-volt lightning strokes—most powerful ever created by man—are discharged at will under controlled conditions. Here, basic research on high voltage contributes to the improved design of many types of electrical apparatus.

High-voltage power packs, for example, have now been developed by G. E. for a new type of electrostatic air cleaning equipment for the home—a brand new development in connection with home heating. Through electrostatic precipitation, dust particles as small as .25 micron (1 micron = 1/25,000 inch) can be collected! This process, used industrially for more than 40 years, is recognized today as the most efficient method for the control of fine particles of dust, smoke, soot, pollen or fumes in the home.

Working with G-E engineers, American Air Filter has succeeded in adapting this process to the home-heating field. The new AAF "Electro-Klean" unit, equipped with a G-E high-voltage power pack, is another indication of General Electric leadership in heating components. A leadership born of more than 25 years experience in supplying high-voltage equipment to the heating field. General Electric Co., Schenectady 5, N. Y.

411-103

### IGNITION TRANSFORMERS

Another G-E product which contributes to the reliability of modern heating equipment. Exclusive 2-way self-shielding adds assurance against radio and tv interference.



**GENERAL**  **ELECTRIC**

**Coupon on page 109**

plify heating changes on combustion equipment using low pressure gas and air — Eclipse Fuel Engineering Co., Rockford, Ill. The adjustable air jet and venturi throat give a wide range of gas capacities, the company states. The mixer can handle various burner requirements when a simple field adjustment is made. Adjustment permits use with any burner capacity in its range, with all commercial gases. AA 103

**Oil Fired Furnaces**

BULLETIN COVERS large oil fired furnaces in output sizes of 85,400 Btu to 335,000 Btu — Ko-Z-Aire Products, Inc., Red Oak, Ia. The larger models are shipped unassembled. Ratings and specifications are given. AA 104

**Stock List and Calculator for Steel**

STOCK LIST for steel buyers, with attached calculator which converts pricing code numbers on all stainless steel items listed into current prices in all quantity brackets — Chicago Steel Service Co., Chicago. AA 105

**Furnace Vacuum Cleaner**

BROCHURE DESCRIBES and illustrates the Nu-Vac lightweight (25 lb) vacuum cleaner for furnaces and other commercial uses — Empire Chemical Products Co.,

Newark, N. J. The 5/7 hp motor with two-stage turbine fan gives 56 in. water lift, the manufacturer states. A disposable paper bag is used. AA 106

**Aluminum Mill Products**

NEW EDITION of a mill products brochure discusses advantages of wrought aluminum alloys, lists aluminum mill products, and details the various product forms, finishes, alloys, tempers and sizes that are available — Reynolds Metals Co., Louisville. An alloy selection guide is included, as well as information on fabricating and finishing. AA 107

**Industrial Fans**

ELEVEN SIZES of new industrial fans and their standard wheels are described in Booklet SA-6873 — Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston. The fans covered range in size from 670 to 44,000 cfm at pressures up to 16 in. mercury. The three available wheel types are air handling, material handling, and long shavings. Accessories are illustrated, and a table of maximum operating rpm's for various fan sizes and operating temperatures is presented. AA 108

**Oil Burner Nozzles**

OIL BURNER nozzle display furnished as a merchandising aid to wholesalers of oil burner nozzles and accessories —

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This Chase full-weight copper thru-wall flashing gives a firm bond in all directions. And the integrated cap flashing receiver makes it easy to install the counter flashing. You can install it *after* base-flashing and roof are installed. No plugs or wedges are needed to keep the receiver open.

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**Coupon on page 109**

Delavan Mfg. Co., Des Moines. The display serves as a counter card and as a literature rack. AA 109

**Terne Metal Roofing**

THE FALL, 1952 issue of *Terne Topics*, contains a description of how to construct a flat locked seam roof, in addition to other information on terne metal roofing — Follansbee Steel Corp., Pittsburgh. AA 110

**Conversion Oil Burner**

Oil BURNER catalog gives full capacity and engineering data on the new KO 3 conversion oil burner for modernizing old furnaces and boilers — Ko-Z-Aire Products, Inc., Red Oak, Ia. The burner features a discharge air regulator designed to keep the supply of air inside the burner constant regardless of drafts or other outside conditions. Capacity is from 0.85 to 3.00 gph. AA 111

**Silver Alloy Brazing**

SECOND EDITION OF *A Complete Guide to Successful Silver Brazing* (48 pages) covers low temperature brazing, brazing alloys, joint design, preformed brazing shapes, plymetals, fluxing, heating methods, cleaning and inspection — The American Platinum Works, Newark,

N. J. Reference charts are included as aids in selecting specifications for silver brazing alloys, for checking Government and other specifications. AA 112

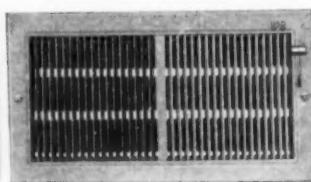
**Gas Fired Unit Heaters**

TECHNICAL BULLETIN 23-2 describes Series 23 gas fired unit heaters which includes a number of sizes with Btu capacities ranging from 55,000 to 400,000 Btu per hr — United States Air Conditioning Corp., Minneapolis. The heaters burn all types of gas at the rated capacities. A newly designed line of blower heaters, approved for use with ductwork, also is featured. Included are capacity tables and roughing in dimensions for the complete unit heater line. AA 113

**Welding Metals**

*Weldability of Metals*, a 141 page book, gives information on how to weld ferrous and non-ferrous metals — The Lincoln Electric Co., Cleveland 17. Various types of carbon and alloy steels are described in terms of nominal chemical analysis, properties, uses and characteristics. The best welding procedure for each is detailed. American Welding Society specifications for electrodes used to weld are given. The same treatment is given to copper, aluminum and nickel and their alloys. Cast iron, forgings, cast steel, wrought iron, ingot iron, galvanized steel, terneplate, etc., are covered. Hard-

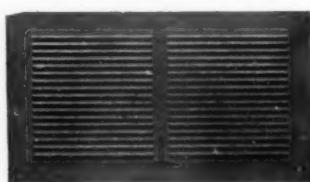
## *A Complete Line for all Your Needs*



No. 4432 register with flexible fins and multi-louvre valve.

Here are some improved and new designs in Auer registers, both for air conditioning and for perimeter systems. The Fig. DRP fabricated floor registers are ideal for perimeter jobs. They have adjustable cross bars. Fig. DRP 2 1/4 x 14 has single valve, and Fig. DRP has multi-louvres which can be set for desired volume and direction and locked in place by a balancing adjustment device. Made in proper sizes for perimeter heating requirements, with intakes to match.

Write for new Auer Register Book 52 on all models, also Bulletin on perforated grilles.



No. 7032 register with flexible fins and single valve.

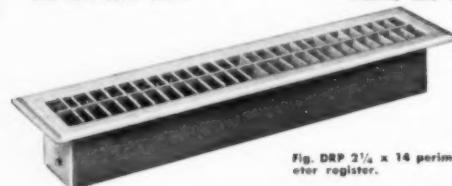


Fig. DRP 2 1/4 x 14 perimeter register.

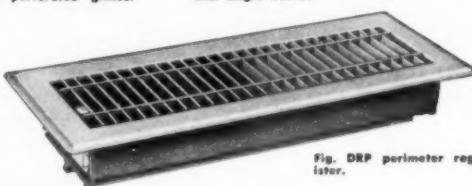


Fig. DRP perimeter register.

THE AUER REGISTER CO., 6600 CLEMENT Ave., Cleveland 5, Ohio.  
Canadian Distributor, Marchand Furnace, Ltd., Tilbury, Ont.

**Auer** **REGISTERS**  
& GRILLES for AIR CONDITIONING & GRAVITY



Good things  
come in... **SMALL  
PACKAGES**

Come and see what International Economy® is showing at the  
**International Heating and  
Ventilating Exposition  
Chicago, Jan. 26-30, Booth 443**

Everybody will be talking about the 1953 International Economy® line and the new, completely packaged hi-boys, lo-boys, gravity units, counterflos — see them yourself at Booth 443.

You'll discover why the Economy® line meets all of today's heating needs — why good things for you can come in small packages!



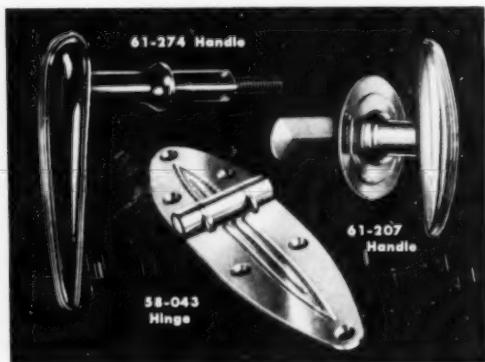
over 110 years of heating experience at your service...

**international heater co., utica 2, n.y.**

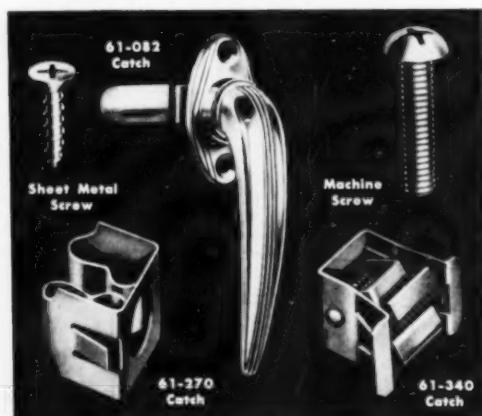
Western Office and Warehouse . . . 1933 Wentworth Ave., Chicago 16, Illinois

**DISTINCTIVE...DURABLE**

# Contributors to Finer Quality OF YOUR PRODUCTS



## National Lock HARDWARE



*For use on metal* STOKERS  
OIL BURNERS • AIR CONDITIONING  
EQUIPMENT • GAS HEATING UNITS  
HUMIDIFIERS • SPACE HEATING UNITS



WRITE US FOR FULL INFORMATION

**NATIONAL LOCK COMPANY**  
ROCKFORD • ILLINOIS

Coupon on page 109

facing is covered as well. The book is reprinted from the 9th edition of the *Procedure Handbook of Arc Welding Design and Practice*, and is available from the company at 50 cents a copy in the U. S., 75 cents elsewhere, postage paid. Please write direct to the manufacturer for this book.

AA 114

### Dampers and Damper Operators

CATALOG 8502 describes louver, round, mixing outlet and fire dampers for regulation of air flow, in addition to electric, pneumatic and manual damper operators — Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Philadelphia.

AA 115

### Gas and Oil Burners

INSTRUCTION PAMPHLET offers diagrammed "do's" and "don'ts" with regard to maintenance of both gas and oil burners — The Majestic Co., Inc., Huntington, Ind. It is intended to explain the equipment to the users, and to help them avoid unnecessary service calls.

AA 116

### Machines and Tools for Light Gage Sheet Metal

BOOKLET NO. 200-H illustrates and describes machines and tools for light gage sheet metal — Niagara Machine & Tool Works, Buffalo. Covered are folders and brakes, rotary machines, slip roll formers, groovers, foot operated squaring shears, power squaring shears, power ring and circle shears, and various models of the company's hand and bench tools.

AA 117

### Forced Air Furnaces

ENVELOPE stuffers display a line of oil and gas fired forced air furnaces — Thatcher Furnace Co., Garwood, N. J. The stuffers are properly sized and light enough to be included in monthly statements and promotional mailings.

AA 118

### Air Distribution System

CATALOG DESCRIBES a unitized baseboard-type system of air distribution for heating and air conditioning — Thermo-Base Div., Gerwin Industries, Michigan City, Ind. The system applies heated or cooled air at the point of greatest heat loss during the winter or the point of greatest heat gain during the summer. Typical installations are shown, and comparative installation cost data is given.

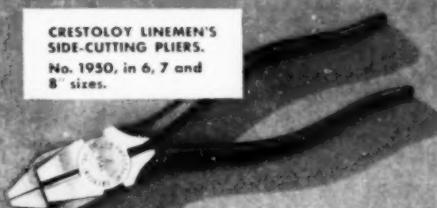
AA 119

### Winch-Hoists and Accessories

BULLETIN 118 describes an expanded line of three related winch hoists and accessories which can be used to install ventilating equipment in hard-to-reach locations — The Lug-All Co., Wynnewood, Pa. Specifications are given, and typical applications are illustrated. The bulletin covers heavy, medium and light duty models, and accessories such as slings and various types of hooks also are described.

AA 120

CRESTOLOY LINEMEN'S  
SIDE-CUTTING PLIERS.  
No. 1950, in 6, 7 and  
8 sizes.



CRESTOLOY DIAGONAL  
CUTTING PLIERS.  
No. 942, in 4, 5, 5½ and  
6 sizes.



CRESTOLOY HEAVY  
DIAGONAL CUTTING PLIERS.  
No. 542, in 7" size only.



CRESTOLOY END  
CUTTING NIPPERS.  
No. 72, in 6 & 7" sizes.



CRESTOLOY LONG  
NOSE PLIERS.  
No. 1033, in 6 & 7" sizes.  
Also No. 654, same  
except with side cutter.



CRESTOLOY LONG FLAT  
NOSE, SIDE-CUTTING PLIERS.  
No. 650, in 7" size only.



## CRESTOLOY PLIERS

*are individually tested!*

Crestoloy Pliers take all the guesswork out of plier buying, because Crescent has taken all the guesswork out of plier making. Rigid specifications establish the material, design, workmanship, tests and inspection of these better tools. Strict adherence to these specifications is maintained by continuous tests and relentless inspection of the *individual* tools. Every plier carries the Crestoloy tag certifying that it has been individually tested.

### GET YOUR FREE COPY...

This new 20-page booklet provides many useful how-to-do-it ideas both for amateurs and professional mechanics, as well as basic information on the proper selection, use and care of hand tools. 93 illustrations. Write today.



## CRESCEANT TOOLS

*Give Wings to Work*

*Sign of the Artisan  
Symbol of Excellence*

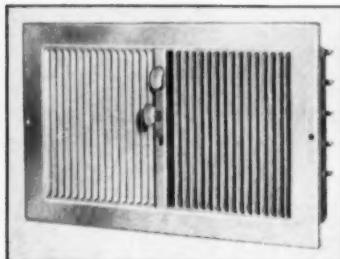
Crescent is a trade mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by  
**CRESCEANT TOOL COMPANY, JAMESTOWN, NEW YORK**



# AirControl

## REGISTERS and GRILLES

are the finest you can use on your  
Heating and Air Conditioning Systems



With these registers you are assured of perfect control of the air stream — both vertical and horizontal.

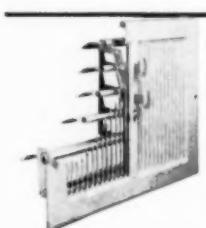
Adjustable vertical fins control the air stream on the horizontal plane.

Air Flow Valve controls the vertical direction of the air. Valve can be pre-set so that it will always open at the correct up or down deflection.

The Push Button operator opens or closes the register with a touch of the finger.

Air Control Dual Control Registers come in a complete range of sizes to fit your every installation need.

Assure yourself and your customers of the most satisfactory operation of your installation by using Air Control Dual Control Registers.



### THE AIR FLOW VALVE

This unique valve is the secret of the efficient control of the air stream.

The valve extends far enough into the duct to assure uniform air distribution over the entire face.

When closed, louvers overlap and seal at two points. This helps prevent whistle and air noise.

Curved form of the louvers aid air movement through the register and helps keep resistance down.

Linkage bar is in the center of the valve thus providing equal pressure on each end of the louvers.

Stop below push button can be set for any desired air deflection.

Write now for your copy of the New Air Control 52-ec Catalog

## AIR CONTROL PRODUCTS, Inc.

COOPERSVILLE

MICHIGAN

### *we hear that . . .*

THEODORE E. MUELLER, president, American Radiator & Standard Sanitary Corp., was awarded the Order of the Star of Solidarity by the Italian government during his recent eight-week tour of the company's European plants. The medal was given as special distinction for ". . . contribution to the reconstruction of Italy." Mr. Mueller had officially opened a new pottery plant which the firm has erected in Brescia.

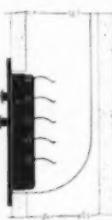


T. E. MUELLER is congratulated by employees of American Standard's Brescia plant



### AIR FLOW VALVE

The Air Flow Valve functions perfectly in any type of stack-head, either square or round.



### OVERHEAD SYSTEMS

When duct comes down from attic install register in regular position — register does not have to be turned upside down.

KOLLET OIL BURNER Supply Co., Reading, Pa., is now operated as Sid Harvey of Reading, Inc. The chairman of the board is now Sid Harvey, president, Sid Harvey, Inc., Valley Stream, N.Y. Peter P. Kollet is president and general manager of the Reading firm. The merge was made to enable the oil burner company to stock a more complete line and to serve customers more efficiently.

EARL A. VALLEE, executive vice president of A-P Controls Corp. for the past ten years, has retired. He joined the company in 1935 as sales manager.

HEATING WHOLESALERS CO., division of Des Moines Furnace & Stove Repair Co., held an open house and "grand opening" recently.

THE QUAKER STATE METALS CO. has purchased all the manufacturing facilities and business of the New Holland Metals Co. of Mountville, Pa. The new company will continue operations at Mountville, manufacturing and selling aluminum roofing sheets, industrial roofing sheets, guttering and down-spouting, moulding, shapes, and building accessories. It is planned that production will be expanded to include manufacture of other aluminum products and some steel and copper products. The same executives of Quaker State who have been directing the New Holland Co. will continue to do so.

FOR THE THIRD consecutive year, Minneapolis-Honeywell Regulator Co., has captured first place in its division in

# Two ways to help you MAKE THE MOST \$\$\$\$\$ from A-P automatic-heat control units for space heaters



**1. Build an A-P Comfort Control center with FREE display and sales helps.**



**2. Use the FREE A-P mailers, stuffers, stickers, and other merchandising aids.**



## WE back you up with heavy national advertising support

MONTH-AFTER-MONTH insertions in Better Homes and Gardens, Saturday Evening Post, Farm Journal and Pathfinder. A barrage of reader impressions that helps build traffic — sells automatic heating convenience! Send for your Profit-Maker Kit today — or ask your jobber.



DEPENDABLE controls

**A-P CONTROLS CORPORATION**

2482 N. 82nd Street, Milwaukee 45, Wisconsin  
In Canada: A-P Controls Corporation Ltd., Cooksville, Ontario



... are you selling  
functional heating  
to the contemporary  
market?

## REZNOR

Automatic Gas Unit Heaters are  
engineered for efficiency planners

Buyers of facilities today must use equipment engineered to provide maximum utility and flexibility . . . functional efficiency. Reznor dealers have the unit heater specifically fitted to modern requirements. Reznor is the top quality unit. Best possible heating is provided with advantages of fast, out-of-the-way installation, fully automatic controls, economical operation and long, trouble-free performance.

If you are a Reznor dealer use your advantage in the contemporary market. If you desire a Reznor dealership, write for details.

### REZNOR WORLD'S LARGEST-SELLING GAS UNIT HEATER

#### MECHANIZED HEATING

A completely automatic, packaged unit in sizes from 25,000 to 200,000 BTU. Installed singly or in multiples as required. High efficiency due to balanced engineering of heat production, air movement and controls. Both floor and suspended models available.

SEE SWEET'S CATALOG FILE

#### REZNOR MANUFACTURING CO.

40 UNION ST. - MERCER, PENNA.

Send me 20-page catalog in full color

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

### We Hear That . . .

the Direct Mail Advertising Association's annual competition for "best of industry awards."

The company's control system utilizing a principle called "solar compensation" to control air conditioning systems is being installed in the 1275-room Statler Hotel now being completed in Los Angeles. The hotel is the first building of its size to incorporate this system, which measures the degree of solar heat, subtracts from it the outside temperature in the shade, and applies the final temperature reading to the air conditioning system which tempers the air in all the guest rooms and offices.

Edward M. Moran, Moran Supply Co., one of the company's distributors in the Chicago area, has inaugurated a helicopter emergency delivery service to speed repair parts to defense plants, hospitals, and other institutions in event of breakdowns. The service is aimed primarily at small towns within a radius of 150 miles of Chicago.

The company is opening a new defense production plant in Minneapolis. A 38,000 sq ft building has been leased.

SKUTTLE MFG. Co. held its fall sales meeting in Detroit recently under the guidance of Carl J. Theobald, sales manager. During the first day, future sales policies were discussed and new products were shown. On the second day, the men made a tour of the plant.



ATTENDING THE Skuttle Mfg. Co. sales meeting were (back row, l. to r.) George Kingsland, Wm. Debler, Jr., V. E. Dunning, Vincent Devine, Elbert N. Moncrief, and Lee Smith; (middle row, l. to r.) George Greulich, Harry Hadley, Wendell Franks, Wm. Debler, Sr., Walter Stamberger, Jr., S. Shepard, Schuyler Evans; (front row, l. to r.) Milton Powers, Russell Geisler, Arthur Evans, Carl J. Theobald, Edw. Wilson, and Alfred Greulich.

REYNOLDS METALS CO. has awarded a joint general and mechanical contract for the construction of its Robert P. Patterson aluminum reduction plant at Arkadelphia, Ark., to Dittmars-Dickmann-Pickens Construction Co., Little Rock, and W. S. Bellows Construction Co., Houston. Work has begun, and is expected to be completed by July 1, 1953. The plant will have a yearly capacity of 110,000,000 lb of aluminum.

Aluminum panels supplied by the company are being used in construction of the new Thule Air Force Base in northern Greenland. The panels were specially designed to protect structures from the severe Arctic weather and to keep in the buildings' heat. The wall is constructed of

# *A Profitable Future for YOU!*



Gas or Oil-Fired Winter  
Air Conditioners—  
Hi-Boys



Gas or Oil-Fired Winter  
Air Conditioners—  
Lo-Boys

A Chrysler Airtemp authorized dealership gives you a real opportunity for a profitable future. Here's why:

- As a Chrysler Airtemp Dealer you're selling a product with a name that's both known and respected by prospects.
- Consistent national advertising in magazines and newspapers develops a growing demand for Chrysler Airtemp products. A cooperative advertising plan provides you with hard-hitting help for your use.
- Best of all, the way is open for you to get into the residential Air Conditioning field. When you sell heating, you can also sell "time-tested" Chrysler Airtemp Year 'Round Air Conditioning. You make extra profits.

Get the complete facts today. Fill in the coupon now and assure yourself of a profitable future.



Focused-Flame  
Oil Burners



Year 'Round  
Air Conditioners

## *Chrysler Airtemp*

### *Comfort Zone*



**HEATING • AIR CONDITIONING  
FOR HOME, BUSINESS, INDUSTRY**

AIRTEMP DIVISION OF CHRYSLER CORPORATION  
DAYTON 1, OHIO

**Airtemp Division of Chrysler Corporation  
P.O. Box 1037, Dayton 1, Ohio**

I would like to know more about Chrysler Airtemp's franchise arrangements.

Name

Address

Phone

City

Zone  State

AA-12-52

## We Hear That . . .

an outer sheet of aluminum bonded to plywood and mounted on 2 x 4 in. framing. To this is attached an inner plywood panel bonded to another sheet of aluminum which provides the inner surface of the wall. Fiberglas insulation fills in the space between the two, plywood surfaces.

NEW, EXPANDED office facilities to handle the increase in demand for air conditioning in the St. Louis area have been opened at 3807 Washington Ave., by Carrier Corp. The 2500 sq ft brick building will house both direct and dealer sales branch offices plus warehouse facilities.

David Hoppock, district manager of dealer sales for the New York area for Carrier, states that residential orders already confirmed for 1953 for the company's new single package, 2 ton, combination cooling and heating units are thirteen times above such sales for the entire year of 1952 in the New York area.

The recent opening of St. Louis' first subdivision of homes designed around the Carrier year-round "Weather-maker" units was preceded by one of the greatest advance sales in the area's history. Before the "pilot" home had been opened to the public, over two thirds of the 69 homes in McKnight Heights had been sold from plans alone. The builder, Melvin Glick, is now planning a six-fold increase in the total number to be built.

TO PROVE to Philadelphians that they can heat their homes without adding to the city's smoke nuisance, an automatic coal stoker (with heating unit removed) made by Electric Furnace Man, Inc., was constantly fired, in the City Hall courtyard, during the community's anti-smoke week.



IN THE COAL STOKER TEST, the two covered cans (right foreground) were used to catch ashes automatically carried away from the burner

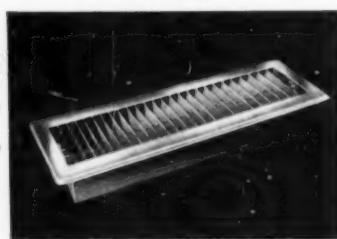


\*This is it!

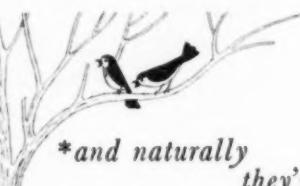
Model No. PH-142

Works Better

Made Stronger



For more information and Standard's  
New Pocket Catalog, attach this coupon  
to your business letterhead and mail to:



\*and naturally  
they're using

## STANDARD'S NEW Perimeter Floor Register with Standard's exclusive DIALAMATIC CONTROL

### SPECIFICATIONS

The face and blades of model PH-142 are fabricated of 16 gauge steel, the blades are set in a fixed-fan angle degree for even deflection. The frame is of one piece, 18 gauge steel construction. The Louvre box fabricated of 16 gauge steel. Packed one to a box, and 20 to a master carton. Comes handsomely finished in gleaming, durable metallic-lustre. 4 sizes available.

## Standard Stamping & Perforating Co.

3151 WEST 49TH PLACE • CHICAGO 32, ILL.

# "This little kit has us selling Honeywell Chronotherms by the case"

— says George C. Webster, Washington, D.C. heating dealer



George C. Webster, left, talking to Honeywell sales engineer Jack Long

## Sell the famous Honeywell Chronotherm!

Latest surveys show that 3 out of every 4 families with thermostats raise and lower temperature settings every day *by hand*. This represents a big, potential market for any dealer selling the Chronotherm, because the Honeywell Chronotherm automatically raises temperature in the morning, automatically lowers it at night, besides saving fuel! For full facts about the Chronotherm, and other outstanding Honeywell controls, call your local Honeywell office. Or write Honeywell today, Dept. AA-12-244, Minneapolis 8, Minnesota.

"I equip every one of my salesmen with one of these special leather kits—and they carry them on every call they make."

"The kit carries three Honeywell thermostats—the Manual, the Time-O-Stat, and the Chronotherm—besides descriptive literature."

"As soon as the furnace is sold, my salesmen bring out the kit—and start selling a better control job to go with it! A better control job to us consists in *upgrading* the customer to the greater merits and benefits of the automatic Honeywell Chronotherm."

"Basically, it's a pretty simple idea. Merely a way we have found of *demonstrating* a product to help a selling job."

"But it certainly has helped us sell plenty of Honeywell Chronotherms—and make more money than we could ever hope to make selling manually operated controls. Our sales figures prove it. We do a volume of about a million dollars a year—and do this almost entirely on modernization, as we do not work on new construction."

"The Honeywell Chronotherm is a great product and certainly sells with a little imagination and push."



**Honeywell**  
MINNEAPOLIS  
First in Controls



Another Plus-Profit  
Idea from Honeywell

## We Hear That . . .

A NEW \$1,000,000 research and testing laboratory is being built at La Crosse by The Trane Co. It will include facilities for duplicating temperature, humidity, pressure and air movement conditions anywhere in the world, and according to the company, will probably be the largest laboratory in the world devoted primarily to the science of heat exchange.

MORRISON STEEL PRODUCTS, INC., is this year celebrating its 30th anniversary. The company was founded in 1912 as a small two-man fender shop.

AN AGREEMENT has been made between the Tuthill Pump Co. and the Ingersoll Machine & Tool Co., Ltd., Canada, by which Ingersoll will manufacture and distribute Tuthill's new Model 30A5G oil burner pump. Ingersoll also will distribute the company's general line of industrial pumps.

A COLONY of 30 homes, which will sell for \$10,000 to \$110,000, featuring General Electric Co. year-round air conditioning, is being put up in the Northaven Hills section of Dallas.

THE ROBERT BARCLAY CO. recently sponsored a service session in which over 225 servicemen heard a talk on the

best methods of installing, servicing and maintaining fuel units, given by B. L. Douglass, service manager, Fuel Unit Div., Sundstrand Machine Tool Co.



MR. DOUGLASS used slides to help explain problems facing the servicemen

PROPOSED CONSOLIDATION of U.S. Machine Corp. with Stewart-Warner Corp. has been announced. The plan provides for acquisition by Stewart-Warner of all the assets of U.S. Machine, in exchange for Stewart-Warner capital stock, and the distribution of this stock by U.S. Machine to its stockholders. The plan has been approved by the boards of the two companies.

JAMES AND ROACH, INC., received a "Best of Industry" award at the 35th annual conference of the Direct Mail

## YOU SHOULD BE HERE ... to see and learn about the latest developments in HEATING—VENTILATING AIR CONDITIONING

At Chicago's International Amphitheatre, from Jan. 26-30, you'll SEE all that's new, LEARN the latest trends and practices, GET a wealth of new ideas, and MAKE a host of valuable contacts during the 11th International Heating and Ventilating Exposition.

Over 300 technically-staffed exhibits will provide an exceptional opportunity for contractors, engineers, manufacturers, and dealers

## Your Key to '53 . . .



to get a first-hand look at the latest products for conditioning air in all types of homes as well as other buildings . . . compare hundreds of new, improved items, large and small . . . find cost-saving solutions to problems by discussing them with engineering specialists . . . get MONTHS AHEAD in FIVE DAYS. Arrange now to ATTEND and BENEFIT from this exposition of ideas and progress; the largest of its kind ever held.

**11th Air Conditioning Exposition**  
INTERNATIONAL HEATING & VENTILATING EXPOSITION  
Under Auspices of American Society of Heating & Ventilating Engineers

MANAGEMENT INTERNATIONAL EXPOSITION CO.

INTERNATIONAL AMPHITHEATRE  
**CHICAGO**  
JAN. 26-30

# YOU MAY Save 3.15 POUNDS PER SHEET\*

WITH

*MicroRold*®

## STAINLESS STEEL

When you order sheet by gauge number the permissible A. I. S. I. variation in thickness is plus or minus 10%. Thusly, if you order 18 gauge, you may receive a sheet .052 thick when .0475 would suit your purpose. Using a standard 18 gauge 36" x 120" sheet as an example, the theoretical weight is 63 pounds, but this weight could permissibly vary between 65.52 pounds and 59.22 pounds.

A sheet of MicroRold .0475 thick with a tolerance of only 3% would weigh 59.85 pounds thus insuring a saving of 3.15 pounds from the theoretical average-weight, or 5.67 pounds from the maximum, while still remaining within the 18 gauge ordering range.

Weight of One Sheet  
of 18 Gauge 36" x 120"  
Plus or Minus 10%

.052"	—65.52 Pounds
.051"	—64.26 Pounds
.050"	—63.00 Pounds
.049"	—61.74 Pounds
.048"	—60.48 Pounds
.047"	—59.22 Pounds

Theoretical Wt.  
63.00 Pounds

Weight of the same size sheet of .0475 plus or minus 3% is 59.85 pounds with an average saving of 3.15 pounds per sheet.

Multiply this saving by the number of sheets you use per month and the price per pound and you have a good dollar and cents reason for buying MicroRold.

\* Each additional  $1/1000"$  of thickness adds 1.26 pounds weight per sheet.



## WASHINGTON STEEL CORPORATION

WASHINGTON, PENNSYLVANIA



Get your share  
of a **Skyrocketing**  
**Business**  
with **Remington**  
**Room Air Conditioning**

Now is the time to get in on the ground floor of one of the nation's fastest growing businesses—room air conditioning. And the best way to get your share of this vast, virtually untouched market is to take on the most complete line in the industry—Remington.

It's a natural for your present organization! You're not limited to standard window-sill installations with Remington! Here are both window and console units with capacities from  $1\frac{1}{2}$  to  $1\frac{1}{2}$  h.p., a wide variety of AC and DC voltages, air cooled or water cooled models, for remote, in-the-room, and multi-room installations. Unlimited applications dependent only on your ingenuity and ability.

Then too, Remington offers you something really unique in dealer franchise plans. National advertising, assistance with local advertising, display and direct-mail materials and an exclusive stocking plan are only parts of it. Mail the coupon for full details.



**SPECIALISTS IN AIR CONDITIONING**

**REMINGTON**  
**AIR CONDITIONING**  
**DIVISION**  
**4-1 Wiley St.**  
**Auburn, N. Y.**

Send details of the Remington Franchise.  
Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**We Hear That . . .**

Advertising Association held recently in Washington, D. C. On a national basis, the company's direct mail campaign was chosen as the most outstanding in the heating and air conditioning industry for the 1951-52 season.



DALTON P. FOX (right) sales promotion manager of James and Roach, Inc., accepts the direct mail campaign award from Roger Barton (left), editor, *Advertising Agency* and *American Printer*, and E. H. Woodley (center) president, Direct Mail Advertising Association

THE TORRINGTON MFG. CO. was presented with an "Oscar of Industry" award recently for taking first place honors in *Financial World's* annual report competition among members of the international metal products industry.

FOLLANSBEE METAL Warehouses, division of Follansbee Steel Corp., gave over part of its Rochester, N.Y., warehouse for an exhibit of sheet metal working machines during the first week of December. The machines, manufactured by Niagara Machine & Tool Works and others, included foot shears, power tables, bar folders and squaring shears. Follansbee is devoting a room in the Conrad Hilton Hotel, Chicago, at the January annual convention and exposition of the National Association of Home Builders, to a display of various applications of seamless terne roll roofing.

WATERMAN-WATERBURY customers will find it easy to locate their local dealers, now that a new, larger Plastilux sign is available to dealers.

Chief advantages of the larger sign are increased visibility, both day and night, and more area for the dealer imprint.

B. L. RUSHTON, Inc., manufacturers' agent in Pittsburgh, is now handling Morrison Products, Inc., furnaces, Research Products Corp., filters, and Auer Register Co. grilles and registers, in addition to handling sheet metal pipe and fittings.



## Yes! YOU CAN HANG STAINLESS

- NOTHING NEW TO LEARN
- NO TRICKS
- NO NEW EQUIPMENT NEEDED

If you've hesitated in the past about taking those high-profit stainless steel roof drainage jobs, forget your fears. Berger Drainage Products made of Republic ENDURO Stainless Steel are *easy to hang*. No special skill is needed, other than your own knowledge and experience.

Your usual tools and equipment are fine. Berger ENDURO Drainage Products work as easily as those made of familiar 26-gauge galvanized steel . . . easier, in some cases, because Berger is making "Snap-Tite" of ENDURO. That's the patented eaves trough you just slip, snap and seal.

There's no trick to soldering ENDURO, either. Your iron should be a large one, heated slightly more than usual. Remember to clean off all flux *immediately after soldering*. Use a 5% to 10% solution of washing soda with water.

Be sure to use all-ENDURO fittings and accessories. Then you'll have hung a drainage system that's stronger and more attractive than ordinary systems . . . that resists rust and corrosion . . . that won't bleed or discolor paint . . . that resists abrasion and denting . . . that requires little or no maintenance . . . that pays you well.

You'll find jobber stocks of ready-to-use Berger ENDURO Stainless Steel Roof Drainage Products in most areas . . . as well as Berger Drainage Products of Toncan Iron, and galvanized steel.

include Snaptite Eaves Trough; "K" Gutter; Plain Round, Corrugated Round and Corrugated Square Conductor Pipe; Ridge Rolls; Flashing; Roll Valley; plus a complete line of all necessary fittings. All are made of 28-gauge Republic ENDURO Stainless Steel, Type 430, dull coat finish.



*Berger*

Manufacturing Division

REPUBLIC STEEL CORPORATION • CANTON 3, OHIO

Offices in BOSTON, DETROIT, INDIANAPOLIS, PHILADELPHIA and ST. LOUIS



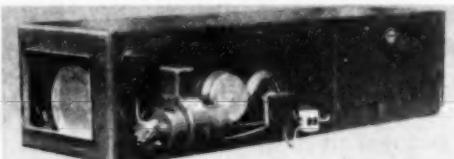
# Horizontal Furnaces Opening New Profit Opportunities

## Heating Contractors Help Builders Beat Rising Costs and Make Money Doing It

Keeping the cost of new homes within the reach of potential buyers is a major problem today. Builders and contractors are meeting it in two ways: First, to beat the high cost of single lots, they are developing large tracts of land and building many homes at the same time. Second, they are eliminating every possible costly feature — basements, garages, even service rooms.

### New Furnace Opens New Field

This is opening up a whole new field of opportunity for the heating and sheet metal contractor—the sale and installation of underfloor central warm air heating systems. The sensational NEW "Besser Junior" makes central heat possible in even the lowest cost homes.



The Besser Horizontal Furnace Needs No Basement or Utility Room — Can Be Installed Under-floor or Overhead

Because of the great savings, more and more builders are turning to the new type horizontal oil-burning furnaces. A central heating system adds value to any house, makes it easier to sell—it is far superior to floor furnaces. Now, the NEW "Besser Junior" brings central heat within every price range.

### Here's Where Profits Are Made

Bidding on the big jobs is always competitive, so where do you come in? Here's the answer: to start with, you've got something to sell—the answer to a builder's prayer—a way to put central heat into every house without the cost of a basement or utility room. That's a natural advantage. Now, the cost is lower than ever.

Still, you may have to figure closely, so where's your profit? Right here! Service call-backs are what eat up your profit. When you install a Besser Horizontal, service calls are fewer—for fewer—because only the best goes into a Besser! Properly installed, it's virtually trouble-free. Call-backs will be few and far between. Every Besser is fully guaranteed . . . because it's built to last!



Besser Plant Facilities Expanded 50% to Meet Growing Demand

### Double Sales Possibilities

Quiet, automatic Besser Horizontals are equally adaptable to overhead installation on commercial jobs where floor space is at a premium. One furnace gives you a double sales potential. Full range of sizes to meet every job need—delivered to you assembled, ready to install.

### New Territories To Be Opened

Greatly expanded plant facilities make it possible to serve a larger area. Distributor franchises and dealerships in certain areas offer a real opportunity for profit in a product you can sell with confidence. Inquiries from aggressive Manufacturer's Agents invited. For full information write: Besser Metal Products Corp., 754 Clement Ave., P. O. Box 4064, Charlotte, N. C.

## appointments . . .

**R. L. LERCH** as regional manager for the Middle West territory for General Controls Co. He had been Chicago factory branch office manager, and will now supervise offices in Minneapolis, Milwaukee, St. Louis, Chicago, Indianapolis, and Des Moines. To supervise the Eastern Seaboard area as regional sales manager, the company has named Russell Strongman, who will cover branch offices in Newark, New York, Hartford, and Boston. **R. C. Boehm**, formerly manager of the company's Birmingham branch office, has been appointed assistant manager for both the appliance and heating divisions of the company. His headquarters will be the new plant in Skokie, Ill., and he will cover the territory east of the Mississippi.

**JOHN S. POWELL** as division sales manager supervising the central division for Farr Co., manufacturers of air filters and air filtration equipment.

**PAUL D. KALEY** as district sales manager in a new New York office for Pittsburgh Plate Glass Co., with headquarters at 30 Rockefeller Plaza. He has been associated with the fiber glass industry since 1941. **H. J. Bygott, Jr.**, has been named Washington, D.C., district sales manager with headquarters at 1545 New York Ave., N. E., a newly established office. He has been with the company since 1935.

**JAMES M. MEAD** elected assistant vice president, Joseph T. Ryerson & Son, Inc. He managed the company's New York steel service plant from 1946 until this year, when he was appointed first assistant to the vice president in charge of purchasing, procurement and merchandising, with headquarters in Chicago. He has been succeeded at New York by William O. Springer, manager of the Cleveland plant since 1945.



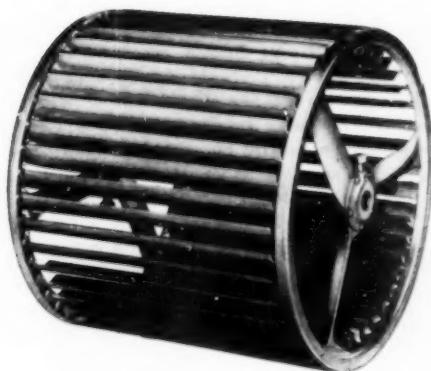
James M. Mead



Edgar F. Wainwright

**EDGAR F. WAINWRIGHT** as manager of appliance sales for the newly formed Appliance Div. of Trion, Inc., designer and manufacturer of electronic air cleaners. Formerly associated with Hamburg Bros., he has had over 15 years' experience in the field. A new representative for the company is James B. Rishel Co., Medical Arts Bldg., 627 Salem Ave., Dayton 6, covering 13 counties in Ohio surrounding Dayton and four counties

# Are you interested in keeping 50% of your blower dollar in your own plant?



**ARE YOU INTERESTED  
IN INCREASING PROFIT  
WITHOUT INCREASING  
OVERHEAD...REDUCING  
CAPITAL INVESTMENT  
...PICKING UP LAG TIME  
AND RUNNING NEARER  
PLANT CAPACITY**

• these are some of the factors that are influencing manufacturers of original equipment to engineer Blower Assemblies as part of their own products. They realize that building Blower Assemblies around stock blowers is an expensive and unsatisfactory process. They realize that, in the case of Blower Assemblies, most every plant has some "lag" time that can be used to increase production on same overhead and keep 50% of the blower dollar in their own plant.

Morrison will design for you, blower units that will fit space requirements and give sufficient capacity. They will come to you knocked down. Sides, bearings and drives can be furnished if desired.

**THE NEW MORRISON  
CATALOG WILL TELL  
THE WHOLE STORY**

*It will show you how we have "gone all out" to help you build your own Blower Assemblies. Write for a copy... or if you have already given consideration to building your own assemblies, let us send one of our representatives to see you.*

16816 Waterloo Road  
Cleveland 10, Ohio

**MORRISON PRODUCTS, INC.**

If you are using or contemplating the use of heat-resisting steels for combustion chambers for oil burner furnaces, we are specialists in producing these types of steels.

Whether you are a large or small user of these steels, our steel making facilities can offer exceptional service by especially shearing to your specified combustion chamber steel blanks, or multiples thereof.

- 1 More quiet burner operation
- 2 Cleaner heat
- 3 Better temperature control
- 4 Considerable savings on fuel costs

Write us for additional information



**Ingersoll** STEEL DIVISION

BORG-WARNER CORPORATION  
310 South Michigan Avenue, Chicago 4, Illinois  
Plant: New Castle, Indiana

## appointments . . .

in Indiana. Also representing the company is Peerless Sales Co., 1611 Main St., Little Rock, Ark., to cover most of the state of Arkansas.

R. L. LLOYD as general manager of advertising, and R. A. Wheeler as assistant general manager of advertising, The International Nickel Co., Inc. In consolidating into one department the advertising sections of the nickel sales and nickel alloys departments, the company made the following other appointments: M. J. Phillips, as assistant to the general manager of advertising, and H. S. Lewis and A. P. More as assistant managers of advertising.

JOHN M. BICKEL and Charles V. Fenn, elected vice presidents of Carrier Corp. Mr. Fenn will continue in charge of the direct sales division, and Mr. Bickel of the dealer sales division. Previously they were managers of the divisions. Cloud Wampler, president of the company, has been re-elected a board member of the National Industrial Conference Board for a one-year term. The Board is a non-profit institution for business and industrial fact finding through scientific research.



John M. Bickel



Charles V. Fenn

M. J. HACKNEY as supervisor of sales training, Air Conditioning Div., General Electric Co. He joined the company in 1919. C. D. Bradrick has been named manager of manufacturing of the Heat Pump Dept. Formerly, he was manager of industrial engineering for the manufacturing department of the G-E Air Conditioning Div. In addition, Richard D. Tyler has been appointed manager of marketing, and Thomas J. Kelly manager of engineering for the Appliance Control Dept. at Morrison, Ill. Most recently, Mr. Tyler was assistant to the marketing manager to handle special assignments in the Fractional Hp Motor Dept., and Mr. Kelly was design engineer for the Appliance Control Dept.

JOHN BURMAN as fiber glass consultant in the Detroit office of Libbey-Owens-Ford Glass Co. Formerly he was resident sales representative for the company in the Wallingford, Conn., area. John T. Shute, recently with Fiberglas Canada, Ltd., has been named district sales manager at Chicago for the Fiber Glass Div. In addition, Ralph G. Cox has been named field sales representative in the Charlotte, N. C., area for the Fiber Glass



HOW ABOUT CLEANING WELDED CORNERS?  
EASY! says *Stainless Sam*

If you want to remove weld discoloration or light scale from inside corner welds and other hard-to-get-at places in welded stainless steel tanks and pans, you can do it easily electrolytically—with homemade equipment.

### Here's what it takes

All you need is a copper rod about  $\frac{1}{4}$ -inch in diameter, bent to convenient shape, a 4 to 24 volt alternating current source, and an electrolyte consisting of 50 per cent by volume solution of commercial (75%) phosphoric acid in water. Fit copper rod with short sections of rubber tubing, spaced to prevent contact of the rod with the stainless steel.

### Do it this way

To clean inside corner welds, tip part so that corner will hold a tablespoonful or more of the electrolyte or acid solution; connect the copper rod to one wire of the power source and ground the work with the other. The copper rod or "needle" is then passed through the acid solution along the weld so that the rubber insulators touch the stainless, but the copper rod does not. Weld discoloration disappears quickly and the corner is bright and clean. After finishing, rinse thoroughly with water.

For flat areas and outside corners, a  $\frac{1}{8}$  by  $\frac{1}{2}$ -inch flat copper strip, wrapped in glass or asbestos cloth soaked in the electrolyte, cleans well.

Rate of cleaning is from 2 to 4 feet per minute for the round rod on inside weld cleaning, considerably slower for the flat copper strip. Heavy weld slag must always be removed by chipping or wire brushing before cleaning.

This is just one of the many tips that Armco Distributors can give you to make your stainless fabrication easier and better. They can give you sound advice based on experience, as well as booklets and material on every phase of stainless fabrication. Ask for these free helps.



This is the copper rod that does the job. Note short sections of tubing that insulate rod from stainless steel.



Removing inside corner weld discoloration electrolytically. Entire job requires only a few minutes.

**ARMCO**  
**STEEL CORPORATION**



4732 Curtis Street, Middletown, Ohio • Distributors and Sales Offices from Coast to Coast • Export: The Armco International Corporation

# You Can Do More Quicker With A • Super •

No need to turn away customers for lack of time when you clean heating plants with a Super. It's fast, it's easy, it's thorough. Cleans 'em hot or cold. Won't disturb the household. You can take full advantage of the "last minute rush" for furnace cleaning if you let a Super do the work.

The powerful Super Red Streak Model SH cleans all kinds of heating plants, also provides both wet and dry pick-up, cleans boiler tubes. The Super comes equipped with chimney cleaning tools which are used from the basement. No dangerous climbing on slippery roofs.



### New Non-Clog Filter Bag

The new Supertex filter bag is made of a special fabric. Acids and chemicals in coal and oil soot and other dusts form a fragile film on the inside surface of the Supertex bag. This film breaks down and falls, leaving the pores of the bag unobstructed and the fabric undamaged.

Send for the FREE SUPER SALES PLAN BOOK. It tells you how to build a furnace cleaning business. Your wholesaler can give you complete data on the Super Red Streak Model SH. Or write us.

**NATIONAL SUPER SERVICE CO., INC.**      Sales and Service  
1944 N. 13th St.      Toledo 2, Ohio      in Principal Cities

In Canada: Plant Maintenance Equipment Co., Toronto and Vancouver

"Once Over Does It"



### appointments . . .

Div. Most recently he was with the Duke Power Co. His offices will be at 319-322 Professional Bldg., 403 North Tryon St.

KARL E. JOHNSON as manager, Equipment Div., J. F. Pritchard & Co. For the past six and a half years he has represented the company as Chicago district sales manager, a post in which he is succeeded by E. Allen Bailey. Mr. Johnson succeeds Raymond C. Kelly, now with the Cooling Tower Institute.



Karl E. Johnson



H. F. Oakes

H. FORREST OAKES as regional sales manager for the Southwest for Norge Heat Div., Borg-Warner Corp. His territory includes southern Illinois, southern Indiana, Kansas, Missouri, Oklahoma, Texas, Arkansas, Louisiana, and Mississippi. Mr. Oakes formerly was Midwest sales representative for heating equipment for the company's Ingersoll Products Div.

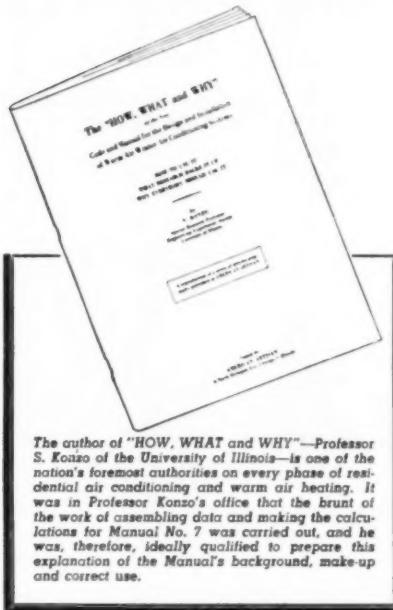
AIR EQUIPMENT DISTRIBUTORS, INC., 311 E. 31st St., New York City, as representatives to handle the air conditioning products of Servel, Inc. The company's territory will include the five boroughs of New York City, plus Suffolk and Nassau counties on Long Island. Robert K. Eskew, who has been manager of sales and engineering in New York for York Corp. air conditioning, is president of the new firm. Another new distributor for Servel is Standard Sheet Metal Works, 512 E. Jefferson St., Phoenix, to cover northern Arizona.

JACK DAVIS appointed to the Jackson, Miss., sales office of The Trane Co., manufacturer of heating, air conditioning and ventilating equipment. He is a graduate of the company's student training program of 1952.

THE RADIO SPECIALTY CORP., 3119-25 South Carrollton Ave., New Orleans, as exclusive distributor in Louisiana for Perfection Stove Co., to handle the complete line of gas and oil heaters. New distributor in eastern Texas is Marlin Associates, Inc., Dallas and Houston, to handle gas and oil space heaters, and oil and electric water heaters.

ARNOLD A. KOSARIN & Associates, Detroit, awarded exclusive franchise for the sale of the National Heater Co.'s

## An Exhaustive and Clear Explanation of Manual No. 7 That Shows You—



The author of "HOW, WHAT and WHY"—Professor S. Konzo of the University of Illinois—is one of the nation's foremost authorities on every phase of residential air conditioning and warm air heating. It was in Professor Konzo's office that the brunt of the work of assembling data and making the calculations for Manual No. 7 was carried out, and he was, therefore, ideally qualified to prepare this explanation of the Manual's background, make-up and correct use.

- HOW to Use It Correctly
- WHAT Experience Is Behind It
- WHY Every Dealer Should Use It

## "The HOW, WHAT and WHY of the

### Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems"

by S. KONZO

Special Research Professor—Engineering Experiment Station, University of Illinois

75 Pages — 8½" x 11" — \$1.00

Users of Manual No. 7 will find this "HOW, WHAT and WHY" booklet invaluable toward acquiring a clearer understanding of the Manual and properly applying it in the planning and installation of warm air winter air conditioning systems. Published originally as a series of articles in the magazine AMERICAN ARTISAN, this clear and comprehensive analysis has proved so helpful to dealers everywhere that now, in response to a wide demand, it has been reproduced in full in this new 75-page booklet "HOW, WHAT and WHY."

Professor Konzo begins "HOW, WHAT and WHY" by telling why a standard designing procedure for warm air winter air conditioning systems was needed by the industry. He reveals how the country's leading manufacturers of warm air heating equipment got together to work out such a method . . . how nearly 200 of the industry's key engineers held scores of meetings over a long period to coordinate data and experience in working out the dependable, simplified design and installation procedure which Manual No. 7 now offers.

Following this introduction, "HOW, WHAT and WHY" goes into a detailed explanation of the designing procedure itself, section by section. It shows the research and experience behind every rule, recommendation, and table the Manual contains. It tells why such factors as temperature drop in ducts, c.f.m. air delivery, air changes per hour, and various other factors which were once considered vital in the planning of forced air heating systems no longer need concern the designer. It provides much interesting supplementary information and comment which helps make each step in the suggested procedure easy to follow and assures the user of the Manual's complete soundness.

An especially useful feature of this explanatory booklet is a Cross Index which permits finding quickly full information about any item in the Manual which is not wholly clear. All in all, this "HOW, WHAT and WHY" booklet will not only assist owners of the Manual to use it to the fullest possible extent, but it will, in the bargain, add materially to their knowledge of every phase of winter air conditioning.

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- The New Manual Simplifies Engineering
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- Furnace Selection and Rating
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### ORDER BLANK

Individual \_\_\_\_\_  
Firm \_\_\_\_\_  
Street Address \_\_\_\_\_  
City and State \_\_\_\_\_

AMERICAN ARTISAN  
6 No. Michigan Ave., Chicago 2, Ill.

Attached is my remittance of \$1.00  
for which please send me one copy  
of "HOW, WHAT and WHY."



## Balancing Air Supply a Problem?

...then you need the fast, accurate air velocity readings you get with an Alnor Velometer Jr. This palm-size instrument takes the expensive guesswork out of balancing systems and speeds up adjustment of any air conditioning, heating, and/or ventilating set-up.

The Velometer Jr. is a miniature, direct-reading air-velocity meter that's precision built for lasting accuracy. It has double-pivoted, double-jeweled movement, air-actuated pointer vane, and sturdy molded Bakelite case. Available with single or double velocity range scales, Velometer Jr. can be one of your most useful tools for years to come. Send today for complete details. Illinois Testing Laboratories, Inc., Rm. 538, 420 N. La Salle Street, Chicago 10, Ill.

# Alnor

PRECISION INSTRUMENTS  
FOR EVERY INDUSTRY

### appointments . . .

direct fired heaters, in Michigan, northern Illinois, and northern Ohio. Located at 604 Boulevard Bldg., the firm is headed by Arnold A. Kosarin, previously a district sales manager for the Dravo Corp., and M. H. Stern, previously assistant chief engineer, service manager, and sales engineer in the Detroit area for Dravo.

HOWARD E. EARL as chief engineer in charge of an engineering department for Sundstrand Machine Tool Co. His work will entail coordinating the design and development of new products. Formerly, he was with the Eureka Williams Corp. as director of research.



Howard E. Earl

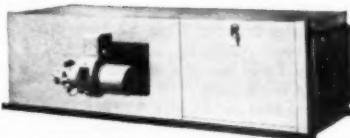


H. T. Kessler

HARRY T. KESSLER elected president and treasurer of the Tuthill Pump Co. G. B. Tuthill, former president, is now chairman of the board, and N. G. Tuthill has been elected

**QUIET AUTOMATIC  
OIL FURNACES**

**SUSPENDED  
Or Laydown Air Conditioning  
FURNACES**



**SPACE SAVER...and a Labor Saver**

It comes completely assembled including combustion chamber. For Garages, Service Stations, and Basementless Homes. Made in sizes from 75,000 BTU to 600,000 BTU.

*Approved by Leading Oil Companies, Underwriters and Municipalities. WRITE TODAY FOR FULL DETAILS*

A PRODUCT OF  
**QUIET AUTOMATIC BURNER CORP.**

J. G. KAVENY, President  
33-35 BLOOMFIELD AVE.

NEWARK 4, N. J.

Sell the convenience and comfort of  
**WINTER AIR CONDITIONING**  
 with the **REX AIR-PAK**  
**BLOWER-FILTER**



**H**ere's an opportunity to offer new comfort and convenience to your customers—an ideal way to transform scores of gravity furnaces into modern winter air-conditioners.

The **REX AIR-PAK BLOWER-FILTER** forces clean filtered air, at even temperatures, into every corner of every room throughout the winter and provides cooling ventilation for summer. Regardless of type of fuel—the Rex Air-Pak will save up to 25% in fuel bills.

Packaged for easy installation—cushioned on resilient rubber for quiet operation—housed in a sturdy, compact, baked-enamel cabinet—the Rex Air-Pak is designed for lifelong, trouble-free satisfaction. A large variety of sizes makes it easy for you to service any job.

For complete details—write today to

**AIR CONTROLS, INC.**

Division of the Cleveland Heater Co.

2310 SUPERIOR AVENUE • CLEVELAND, OHIO

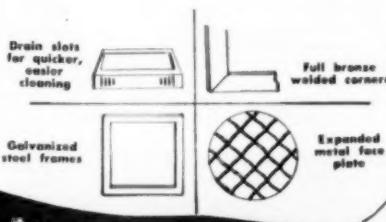
*Airsan*  
**EXTRA FEATURES**

*mean more effective dust collection*



Airsan Air Filters offer you **extra features** that save you money, offer greater filtering efficiency. Initial cost and installation is less. Easier cleaning and larger dust-holding capacity cuts maintenance expense. Investigate Airsan today. Learn why it pays to *buy the difference* — at no extra cost.

Approved by Underwriters Laboratory.



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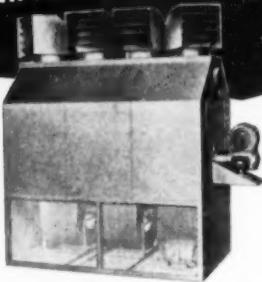
Douglas Engineering Co., Ltd., MONTREAL  
 \*A Few Distributorships Available. Write for Details.

Name "AIRSAN"

Reg. U.S. Pat. Off.

## the NATIONAL CHAMPION direct-fired HEATER

the "GIBRALTAR"  
of direct-fired heaters



### heavy and light oil fired series

Listed by Underwriters' Laboratories, Inc.

NATIONAL CHAMPION direct-fired  
HEAVY AND LIGHT OIL SERIES  
HEATERS have met the rigid standards  
set by Underwriters' Laboratories, Inc.  
—assurance of safe unit operation!

Twenty-four basic units in the heavy and light oil fired series offer heat capacities from 200,000 to 2,000,000 BTU's!

NATIONAL HEATERS FEATURE headdrop design stainless  
steel firebox.

Designed by National Heater engineers to ensure lower air flow resistance—allows a constant, uniform flow of clean air over the heating unit. Easy to wipe—ensuring better and faster heat distribution!

### Heater Construction

Units are of welded one-piece steel construction. Design utilizes to advantage the direct flame-metal-air principle of heat transfer for maximum efficiency.

### Burners

Light and heavy oil burners, designed for Nos. 1, 2, 4 and 5 fuels, are pressure gun type. These units are also Listed by Underwriters' Laboratories, Inc. All burners are equipped with patented air adjustment for stable flame and quiet operation with short draft tube to reduce overall unit length. *Electronic flame failure control—standard equipment!*

there is a NATIONAL CHAMPION direct-fired  
heater for all HEATING REQUIREMENTS!

Another product of  
**The NATIONAL HEATER COMPANY**  
2182 Cleora Avenue, St. Paul 4, Minnesota

For further information on National Champion direct-fired  
Heaters—write to the above address—Dept. KP-1.

## appointments . . .

vice president and secretary. Mr. Kessler has served as executive vice president of the company since 1943. He will direct an expansion program which will introduce several new products, among them an oil burner pump.

COMSTOCK & Co., Buffalo, as advertising agency for Morrison Steel Products, Inc. David C. Zinter has been appointed Ohio and West Virginia sales representative in Morrison's Mor-Sun Furnace Div. He has spent three years with United States Gauge Co. as Chicago sales engineer, and four years as Cleveland district manager for White-Rodgers Electric Co. His headquarters will be 14491 Washington Blvd., University Heights, Ohio.

H. E. CULLEY & Co., Louisville, as representative for United States Air Conditioning Corp., to handle the entire line of air conditioning, heating and ventilating equipment in Kentucky, southern Illinois and southern Indiana.

Ricker Heating Co., of Oak Ridge, Tenn., Witherow Plumbing and Tin Shop, of Mount Pleasant, and Locke Heating & Construction Co. of Knoxville, are now authorized dealers for the company, and the Carolina Heating Co., Inc., Columbia, S. C., will be exclusive dealer for the firm in Richland County.

## Steel BENDING BRAKES

One-man operation



CHICAGO hand-operated bending brakes are available in a variety of standard sizes ranging from 3 to 12 feet in capacities up to 12-gauge sheet metal.

### also

CHICAGO Portable Hand Brakes

CHICAGO Box and Pan Brakes

Full Particulars upon Request

Visit Our  
Booth No.  
242 at the  
January  
Exposition

**DREIS & KRUMP**  
MANUFACTURING COMPANY  
7404 S. Loomis Blvd., Chicago 36, Illinois



## FITTINGS FOR YOU

Nope, we don't make fittings to please ourselves or to please your customers . . . we make 'em to please YOU! Our years of experience have proved beyond any doubt that the quickest way to attain a good, solid reputation is to keep on making the best product ALL the time. That way we know you'll keep coming back to us for fittings that result in neater and faster installations. . . and that will help you reduce your labor costs.

If you're not a Youngstown customer now, then let us show you why it will be to your advantage to always use Youngstown . . . the fittings that really FIT!

### YOUNGSTOWN FURNACE CO.

627 Marshall Street

Youngstown, Ohio

## NO. 91 BENCH PUNCH

### Punches

Angle Iron      Channel Iron  
2 1/2 x 2 1/2 x 1/4      2 1/2 inch Flange x  
1/4 inch Web

### Capacity

1/2 inch hole through 1/4 inch iron  
3/4 inch hole through 3/16 inch iron  
2 inch hole through 1/8 inch iron

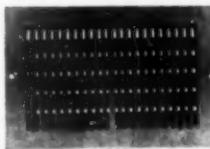


Here's a quality item accepted by workmen as a real time-saver in the shop and on the job. Men who use the No. 91 bench punch every day know it's the best obtainable; clean, fast punching in any type of work. Illustration shows narrow bolster plate which is used with angle iron and channel iron and holes up to and including 1/2 inch round.

Please write us today for booklet.

**W.A.**   
**WHITNEY MFG. CO.**  
636 RACE ST. ROCKFORD ILL

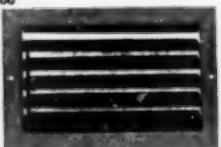
## See Your Jobber



2300



2300



2100

Many thousands of the above types used in housing projects. Lowest in price, more free area.

The Air-O-Vane ceiling diffuser. Also made in type D-R with positive shut-off control (Patents Pending) made in all sizes.



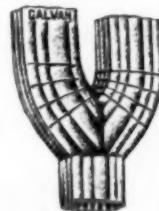
Greatest in free area of any ceiling diffuser and lowest in cost. Write for catalogue or see your jobber.

AIR-O-VANE CEILING DIFFUSER  
WRITE FOR CATALOGUE TO —

**KRUEGER**  
AIR CONDITIONING COMPANY

19 EAST RILLITO ST. TUCSON, ARIZONA

On Behalf of  
Our Jobbers  
Everywhere



GALVAN says,

"MERRY  
CHRISTMAS"  
and a New Year  
of great promise



**GALVAN**

Mfg. Co.

New Albany, Ind.





Send for Your Copy  
of Our New  
**CATALOG**  
No. 16-52  
\*  
It Features the  
*Complete*  
**WHITNEY-JENSEN**  
LINE

**WHITNEY METAL TOOL COMPANY**  
91 FORBES STREET, ROCKFORD, ILLINOIS

### appointments . . .

AARON P. DOWLER as general sales manager in the newly opened New York national sales offices of American Gilsomite Co. Mr. Dowler is former vice president, Cork Insulation Co., N. Y.



A. P. Dowler



Glen Galles

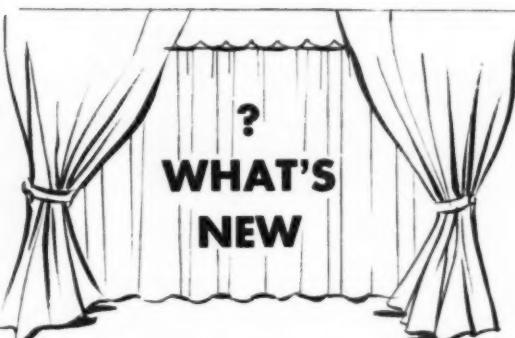
GLEN GALLES as personnel manager, Minneapolis-Honeywell Regulator Co., a newly created post. Mr. Galles has been a member of the company's personnel department since he joined the firm in 1946.

ROBERT P. CAMPBELL as manager of a new district office for Barber-Colman Co., at 900 Monroe, N.W., Grand Rapids 2. The company has also established new offices at 307 E. 4th St., Cincinnati; Edmund C. McFaul, district manager; and 432 East Pike St., Clarksburg, W. Va., Earl J. Kelly, district manager.

**HOT NEWS!**  
**HERE**  
**Next Month**  
**from**

***Metropac***

Winter and Summer Air Conditioner with year 'round Domestic hot water.



## BEVERLY SHEARS SAVE TIME-LABOR-MATERIAL

Make any cut—curved, straight or irregular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to any position and make a clean cut as you go. Handles heavy gauges with ease—lighter metals without distortion. 4 models—capacities 18 gauge to  $\frac{1}{16}$ " mild.



INSIDE SLOTTER  
8" Reach—16 ga. capacity

Makes inside slotting cutting faster, easier, cleaner. Punch and die arrangement of 5 blades assures accuracy, clean cutting action. Cuts  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " or  $2\frac{1}{2}$ " x  $1\frac{1}{4}$ " slot in one stroke. Throat design permits pivoting work at any point in stroke for special inside cuts. Note sample cuts at left.

See your Beverly Dealer or write for illustrated catalog.

**Beverly SHEAR MFG. CO.**  
3020 W. 111TH STREET • CHICAGO 43, ILLINOIS



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on every job  
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One sure way to KEEP down job time is to check on the time spent in assembling warm and cold air runs. If it's excessive according to accepted standards then you'll do well to change your source of fittings.

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We solicit an application for  
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metals up to 36"  
wide — 14  
gauge or lighter.

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Manufacturers & Suppliers  
Furnaces — Pipe & Fittings

10th and Monroe St.      Newport, Ky.

CORROSION  
from  
attacking sheet metal.  
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You will be pleased with "370 SPECIAL", too. It goes further per gallon — covers 5 to 6 squares per gallon, one coat, it hides well and goes on easy. Order from your "370 SPECIAL" distributor.

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1085 Allegheny Avenue      Oakmont, Pa.  
Established 1847

OUR  
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good points

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AND SHOES

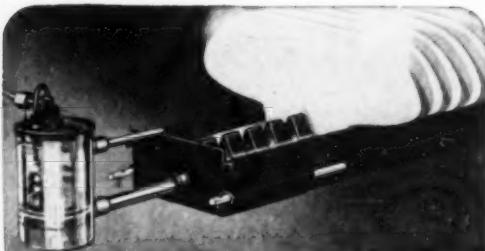
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JOBBER



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**FLO-TROL** Humidifiers — the finest for air conditioning or forced air, with famous Flo-trol control.

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Mounts easily on forced air stack. Low cost, thermostatically controlled. Treats up to 20,000 cu. ft. of air per hour.

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Fully automatic, light-weight, fan dispersion. Treats up to 100,000 cu. ft. of air per hour.

Dept.  
A-1

#### appointments . . .

ROBERT JACK as assistant manager, Heating Control Div., Iron Fireman Mfg. Co., a newly created post. He has been replaced by Hugh Russell as divisional controller of the Portland plants.



Robert Jack



Hugh Russell

T. L. SMITH as sales manager of the Residential Air Diffuser Div., W. B. Connor Engineering Corp. Formerly, he was Chicago district sales manager.

A. L. FABENS, JR., as assistant general manager and production manager of the Ramset Div., Olin Industries, Inc.

J. ROY KNOX elected as vice president, U. S. Div. sales; and E. J. Grady, as vice president, Pacific Boiler Div. sales, for United States Radiator Corp. Mr. Knox has been general sales manager of the company's U. S. Div.

## BARBER BURNERS



Barber 324-B round  
gas conversion burner  
with improved controls,  
enclosed in streamlined head.  
Tested and certified  
by AGA Laboratory.

Gas Conversion Burners in  
sizes to fit all types of round  
or oblong furnaces and boilers.  
Catalog and prices on  
request.

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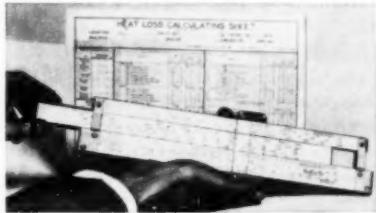


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estimates btu loss for each room, plus total loss from house; CFM requirements for forced warm air, gravity 200° and gravity 175 heating units; square feet of steam or hot water radiation required; pipe area and other details for systems and for each floor; line loss; coal, oil or gas furnace sizes and other details. Send \$15 cash, check or money order or write for full details to Climatemaker Heat Loss Calculator Co., Dept. 110, Box 378, Bloomington, Ill.

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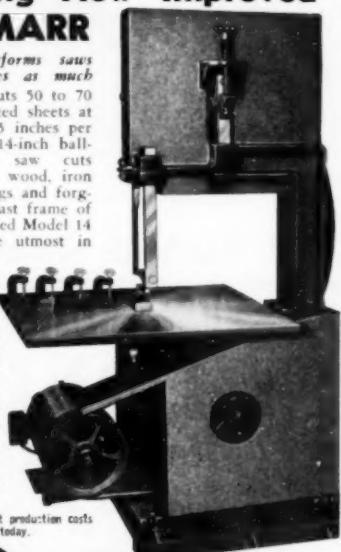
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**85,000 BTU — OIL-FIRED**

FOR CEILING SUSPENSION OR CRAWL-SPACE INSTALLATION



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CEILING SUSPENDED OR IN CRAWL SPACE



Multi-Radiator means more heating surface—greater efficiency. Top-quality burner. Completely wired controls.

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FOOL PROOF  
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Designed for **BOX** LOCK of ventilation  
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**CLAMP** and as  
**WELDING CLAMP**.  
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## Marshall H. Braden

MARSHALL H. BRADEN, one of the pioneers in the oil burner industry, and Charter Member No. 12 of the Old Timers' Club of the Oil Burner Industry, died on September 27, 1952. Mr. Braden gained his early experience working on the Williams Oil-O-Matic burner. He later formed the Dooley-Braden Co., which later became the Nu-Way Corp. He then helped form the Braden Engineering Co. At the time of his death, he was president of the Fuel-Master Corp.

## Sebastian Hazenberg

SEBASTIAN HAZENBERG, vice president, W. C. Hopson Co., died on October 2, 1952. He had been associated with this firm for 53 years.

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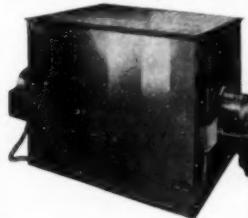
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HOT GALVANIZED ANGLES, BANDS,  
FLATS, ROUNDS

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Galvanized • Blued • Cement Coated • Steel •  
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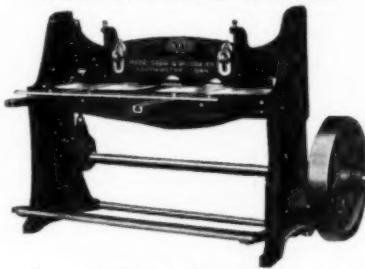
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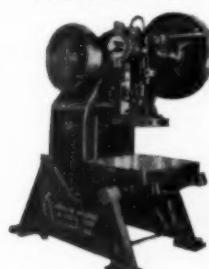
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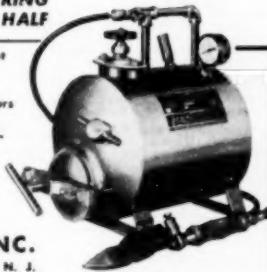
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100"

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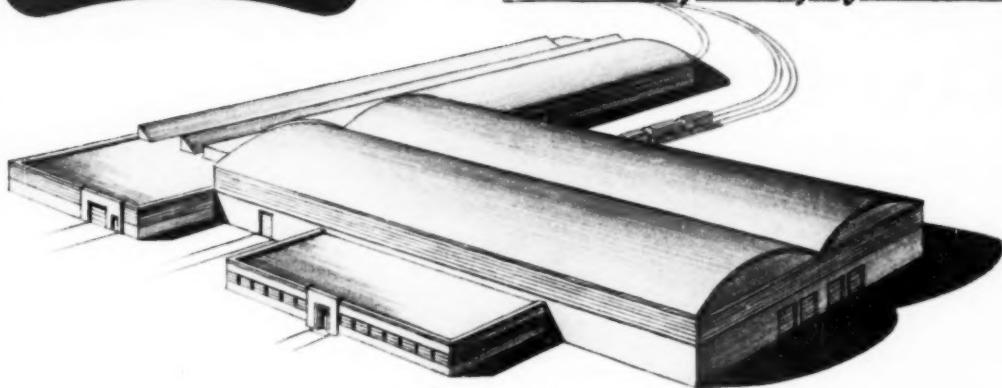
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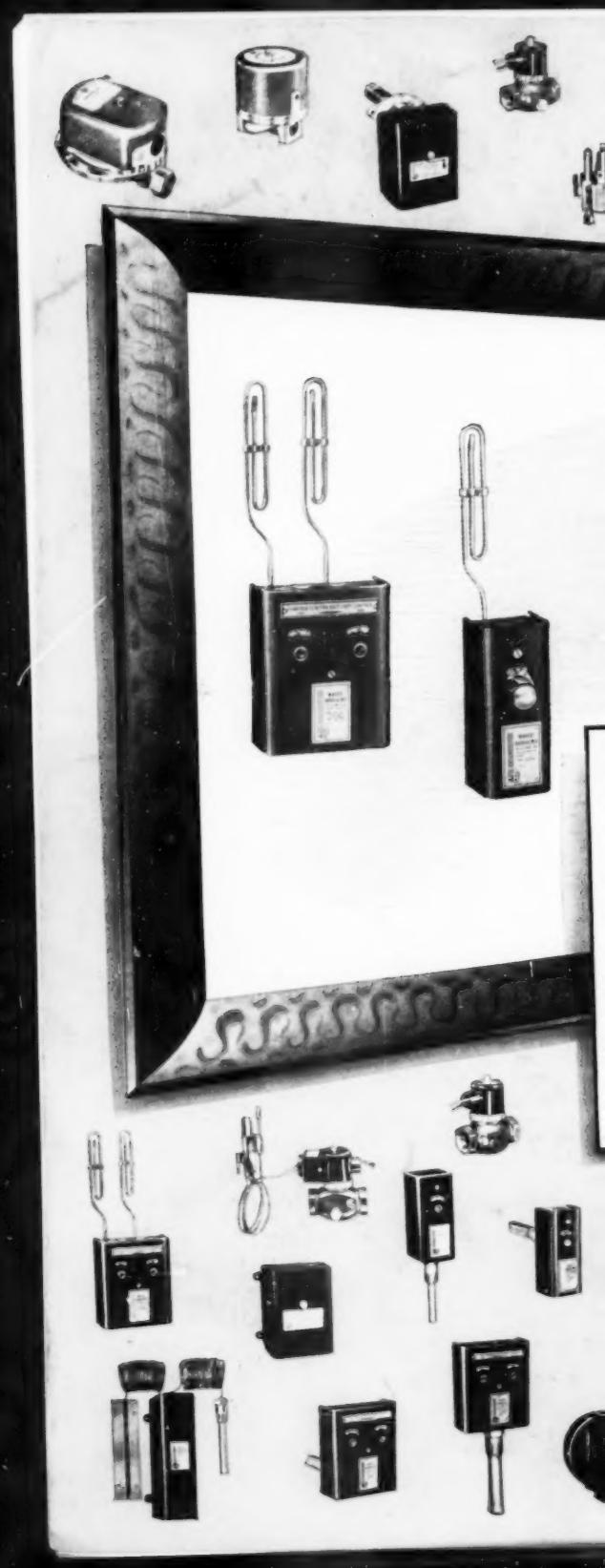
many, for it has carried this company from obscurity to a warehouse structure that measures up to the best in all-around facilities. So it is that this new building marks the end of the beginning for Wolff Metal Service—and inversely, the beginning of a new era. You can be certain of this in the days that lie ahead; more than ever your orders to Wolff are not just to be taken—every one of them will be earned.

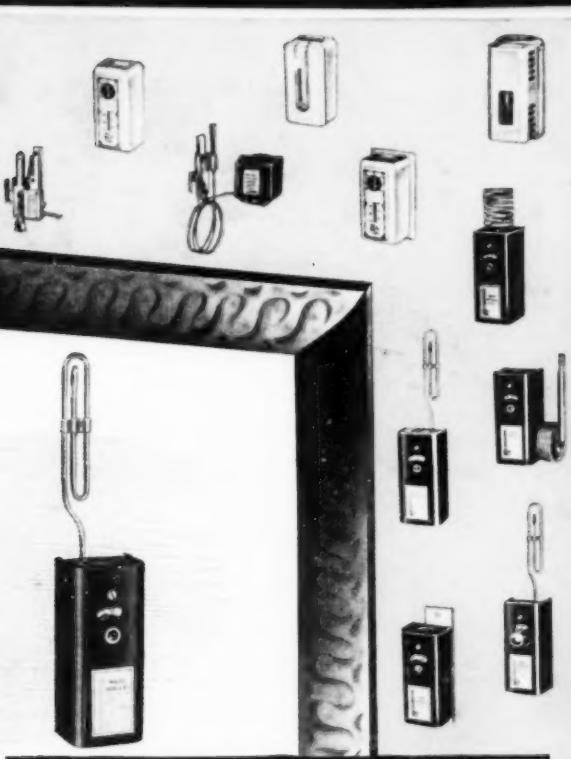
The physical job of moving into these new quarters is one that requires weeks, and it will not be completed until late February. You are, however, invited to look in, and look around, any time you are in the neighborhood. You'll find the new address below; and when we're in, and fully settled, you'll find a welcome mat at the door for YOU.

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